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HEALTH AND SAFETY PLAN FOR INTERIM REMOVAL ACTION FOR BUILDING 351 FLEET  
TRAINING CENTER AND BUILDING 425 BACHELORS OFFICERS QUARTERS NS  
MAYPORT FL  
7/1/2002  
TETRA TECH NUS

**HEALTH AND SAFETY PLAN**  
for  
**INTRIM REMOVAL ACTION**  
for  
**BUILDING 351 FLEET TRAINING CENTER**  
**BUILDING 425 BACHELORS OFFICERS QUARTERS**

**NAVAL STATION  
MAYPORT, FLORIDA**



**Southern Division  
Naval Facilities Engineering Command**

Contract Number N62467-94-D-0888  
Contract Task Orders 0122 & 0123

**July 2002**

HEALTH AND SAFETY PLAN  
FOR  
INTERIM REMOVAL ACTION  
AT  
BUILDING 351 FLEET TRAINING CENTER  
BUILDING 425 BACHELORS OFFICERS QUARTERS

NAVAL STATION  
MAYPORT, FLORIDA

COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION-NAVY (CLEAN) CONTRACT

Submitted to:  
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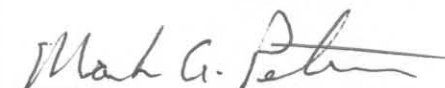
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## **1.0 INTRODUCTION**

This Health and Safety Plan (HASP) provides practices and procedures for Tetra Tech NUS, Inc. (TtNUS) personnel engaged in a site assessment at the Naval Station in Mayport, Florida (NS Mayport). Project activities will be conducted at Building 351 at the Fleet Training Facility and Building 425 at the Bachelors Officers Quarters. This work is authorized under the Comprehensive Long - Term Environmental Action Navy (CLEAN) contract, administered through the U.S. Navy Southern Division Naval Facilities Engineering Command, as defined under Contract No. N62467-94-D-0888; Contract Task Order Numbers 0122 & 0123. This HASP must be used in conjunction with the TtNUS Health and Safety Guidance Manual. Both of these documents must be present at the site during the performance of site activities. The Guidance Manual provides detailed information pertaining to the HASP as well as applicable TtNUS Standard Operating Procedures (SOPs). This HASP and the contents of the Guidance Manual were developed to comply with the requirements stipulated in 29 CFR 1910.120 (OSHA's Hazardous Waste Operations and Emergency Response Standard).

This information used in this HASP is the latest available regarding known or suspected chemical contaminants and potential physical hazards associated with the proposed work at the site. The HASP will be modified if new information becomes available. Changes to the HASP will be made with the approval of the TtNUS Project Health and Safety Officer (PHSO) and the TtNUS Health and Safety Manager (HSM). Requests for modifications to the HASP will be directed to the PHSO, who will determine if the changes are necessary. The PHSO will notify the Task Order Manager (TOM), who will notify all affected personnel of changes.

### **1.1 KEY PROJECT PERSONNEL AND ORGANIZATION**

This section defines responsibility for site safety and health for TtNUS employees engaged in onsite activities. Personnel assigned to these positions will exercise the primary responsibility for onsite health and safety. These persons will be the primary point of contact for any questions regarding the safety and health procedures and the selected control measures that are to be implemented for onsite activities.

- The TtNUS TOM is responsible for the overall direction of health and safety for this project.

- The PHSO is responsible for developing this HASP in accordance with applicable OSHA regulations. Specific responsibilities include:
  - i. Providing information regarding site contaminants and physical hazards associated with the site.
  - ii. Establishing air monitoring and decontamination procedures.
  - iii. Assigning personal protective equipment based on task and potential hazards.
  - iv. Determining emergency response procedures and emergency contacts.
  - v. Stipulating training requirements and reviewing appropriate training and medical surveillance certificates.
  - vi. Providing standard work practices to minimize potential injuries and exposures associated with hazardous waste work.
  - vii. Modify this HASP, as it becomes necessary.
- The TtNUS Field Operations Leader (FOL) is responsible for implementation of the HASP with the assistance of an appointed SSO. The FOL manages field activities, executes the work plan, and enforces safety procedures as applicable to the work plan.
- The SSO supports site activities by advising the FOL on the aspects of health and safety. These duties may include:
  - i. Coordinates health and safety activities with the FOL.
  - ii. Selects, applies, inspects, and maintains personal protective equipment.
  - iii. Establishes work zones and control points in areas of operation.
  - iv. Implements air monitoring program for onsite activities.
  - v. Verifies training and medical clearance of onsite personnel status in relation to site activities.
  - vi. Implements Hazard Communication, Respiratory Protection Programs, and other associated health and safety programs as they may apply to site activities..
  - vii. Coordinates emergency services.
  - viii. Provides site-specific training for onsite personnel.
  - ix. Investigates accidents and injuries (see Attachment I - Illness/Injury Procedure and Report Form)
  - x. Provides input to the PHSO regarding the need to modify, this HASP, or applicable health and safety associated documents as per site-specific requirements.
- Compliance with the requirements stipulated in this HASP is monitored by the SSO and coordinated through the TtNUS CLEAN HSM.



## 1.2 SITE INFORMATION AND PERSONNEL ASSIGNMENTS

In some cases one person may be designated responsibilities for more than one position. For example, at NS Mayport, the FOL may also be responsible for SSO duties. This action will be performed only as credentials or experience permits.

**Site Name:** Naval Station  
Mayport, Florida **Client Contact:** Jan Bouvier  
**Phone Number:** (904) 270-6730

**Southdiv Engineer in Charge:** Beverly Washington **Phone Number:** (843) 820-5581

**Scheduled Activities:** This activity is divided into a multi-task operation, including multi media sampling, monitoring well installation and AFVP. Further detail on this and other site tasks can be found in Section 4 of this HASP.

**Dates of scheduled activities:** Site activities to begin in June 2002 and continue until completion.

### **Project Team:**

#### **TtNUS Management Personnel:**

Mark Peterson

David Siefken

TBD

Matthew M. Soltis, CIH, CSP

James K. Laffey

#### **Discipline/Tasks Assigned:**

Task Order Manager (TOM)

Assistant TOM and Field Operations Leader (FOL)

Site Safety Officer (SSO)

CLEAN Health and Safety Manager

Project Health and Safety Officer (PHSO)

#### **Other Potential TtNUS Project Personnel:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Hazard Assessments (for purposes of 29 CFR 1910.132) and HASP preparation conducted by:

James K. Laffey

## **2.0 EMERGENCY ACTION PLAN**

### **2.1 INTRODUCTION**

This section has been developed as part of a planning effort to direct and guide field personnel in the event of an emergency. Site activities will be coordinated with the client contact, Mr. Jan Bouvier. In the event of an emergency which cannot be mitigated using onsite resources, personnel will evacuate to a safe place of refuge and the appropriate emergency response agencies will be notified. It has been determined that the majority of potential emergency situations would be better supported by outside emergency responders. Based on this determination, TtNUS personnel will not provide emergency response support beyond the capabilities of onsite response. Workers who are ill or who have suffered a non-serious injury may be transported by site personnel to nearby medical facilities, provided that such transport does not aggravate or further endanger the welfare of the injured/ill person. The emergency response agencies listed in this plan are capable of providing the most effective response, and as such, will be designated as the primary responders. These agencies are located within a reasonable distance from the area of site operations, which ensures adequate emergency response time. NS Mayport contact Jan Bouvier will be notified when emergency response agencies are contacted. This Emergency Action Plan conforms to the requirements of 29 CFR 1910.38(a), as allowed in 29 CFR 1910.120(I)(1)(ii).

TtNUS will, through necessary services, provide the following emergency action measures:

- Initial stage fire fighting support and prevention
- Initial spill control and containment measures and prevention
- Removal of personnel from emergency situations
- Initial medical support for injuries or illnesses requiring basic first-aid
- Site control and security measures as necessary

### **2.2 EMERGENCY PLANNING**

Through the initial hazard/risk assessment effort, emergencies resulting from chemical, physical, or fire hazards are considered to be unlikely to be encountered during site activities. Nonetheless, to minimize and eliminate the potential for any emergency situations, pre-emergency planning activities will include the following (which are the responsibility of the SSO and/or the FOL):

- Coordinating with local Emergency Response personnel to ensure that TtNUS emergency action activities are compatible with existing emergency response procedures. Base Fire Protection

and Emergency Services will be notified of scheduled events and activities. This is most imperative in situations where their services may be required.

- Establishing and maintaining information at the project staging area (Support Zone) for easy access in the event of an emergency. This information will include the following:
  - Chemical Inventory (of chemicals used onsite), with Material Safety Data Sheets.
  - Onsite personnel medical records (Medical Data Sheets).
  - A log book identifying personnel onsite each day.
  - Hospital route maps with directions (these should also be placed in each site vehicle).
  - Emergency Notification - phone numbers.

The TtNUS FOL will be responsible for the following tasks:

- Identifying a chain of command for emergency action.
- Educating site workers to the hazards and control measures associated with planned activities at the site, and providing early recognition and prevention, where possible.
- Periodically performing practice drills to ensure site workers are familiar with incidental response measures.
- Providing the necessary equipment to safely accomplish identified tasks.

## **2.3 EMERGENCY RECOGNITION AND PREVENTION**

### **2.3.1 Recognition**

Emergency situations that may be encountered during site activities will generally be recognized by visual observation. To adequately recognize chemical exposures, site personnel must have a clear knowledge of signs and symptoms of exposure associated with site contaminants. This information is provided in Table 6-1. Tasks to be performed at the site, potential hazards associated with those tasks and the recommended control methods are discussed in detail in Sections 5.0 and 6.0. Additionally, early recognition of hazards will be supported by daily site surveys to eliminate any situation predisposed to an emergency. The FOL and/or the SSO will be responsible for performing surveys of work areas prior to initiating site operations and periodically while operations are being conducted. Survey findings will be documented by the FOL and/or the SSO in the Site Health and Safety logbook, however, site personnel

will be responsible for reporting hazardous situations. Where potential hazards exist, TtNUS will initiate control measures to prevent adverse effects to human health and the environment.

The above actions will provide early recognition for potential emergency situations, and allow TtNUS to initiate necessary control measures. However, if the FOL and the SSO determine that control measures are not sufficient to eliminate the hazard, TtNUS will withdraw from the site and notify the appropriate response agencies listed in Table 2-1.

### **2.3.2 Prevention**

TtNUS personnel will minimize the potential for emergencies by following the Health and Safety Guidance Manual and ensuring compliance with the HASP and applicable OSHA regulations. Daily site surveys of work areas, prior to the commencement of that day's activities, by the FOL and/or the SSO will also assist in prevention of illness/injuries when hazards are recognized early and control measures initiated.

## **2.4 EVACUATION ROUTES, PROCEDURES, AND PLACES OF REFUGE**

An evacuation will be initiated whenever recommended hazard controls are insufficient to protect the health, safety or welfare of site workers. Specific examples include but are not limited to, the following: severe weather conditions; fire or explosion; monitoring instrumentation readings which indicate levels of contamination are greater than the action levels; and evidence of personnel overexposure to potential site contaminants.

In the event of an emergency requiring evacuation, personnel will immediately stop activities and report to the designated safe place of refuge unless doing so would pose additional risks. When evacuation to the primary place of refuge is not possible, personnel will proceed to a designated alternate location and remain until further notification from the TtNUS FOL. Safe places of refuge will be identified prior to the commencement of site activities by the SSO and will be conveyed to personnel as part of the pre-activities training session. This information will be reiterated during daily safety meetings. Whenever possible, the safe place of refuge will also serve as the telephone communications point for that area. During an evacuation, personnel will remain at the refuge location until directed otherwise by the TtNUS FOL or the on-site Incident Commander of the Emergency Response Team. The FOL or the SSO will perform a head count at this location to account for and to confirm the location of site personnel. Emergency response personnel will be immediately notified of any unaccounted personnel. The SSO will document daily the names of personnel onsite in the site Health and Safety Logbook. This information will be utilized to perform the head count in the event of an emergency.

Evacuation procedures will be discussed during the pre-activities training session, prior to the initiation of project tasks. Evacuation routes from the site and safe places of refuge are dependent upon the location at which work is being performed and the circumstances under which an evacuation is required. Additionally, site location and meteorological conditions (i.e., wind speed and direction) may dictate evacuation routes. As a result, assembly points will be selected and communicated to the workers relative to the site location where work is being performed. Evacuation should always take place in an upwind direction from the site.

## **2.5 DECONTAMINATION PROCEDURES / EMERGENCY MEDICAL TREATMENT**

During any site evacuation, decontamination procedures will be performed only if doing so does not further jeopardize the welfare of site workers. Decontamination will not be performed if the incident warrants immediate evacuation. However, it is unlikely that an evacuation would occur which would require workers to evacuate the site without first performing the necessary decontamination procedures.

TtNUS personnel will perform removal of personnel from emergency situations and may provide initial medical support for injury/illnesses requiring only first-aid level support. Medical attention above that level will require assistance and support from the designated emergency response agencies. Attachment I provides the procedure to follow when reporting an injury/illness, and the form to be used for this purpose. **If the emergency involves personnel exposures to chemicals, follow the steps provided in Figure 2-1.**

## **2.6 EMERGENCY CONTACTS**

Prior to initiating field activities, personnel will be thoroughly briefed on the emergency procedures to be followed in the event of an accident. Table 2-1 provides a list of emergency contacts and their associated telephone numbers. This table must be posted where it is readily available to site personnel. Facility maps should also be posted showing potential evacuation routes and designated meeting areas.

## **FIGURE 2-1 EMERGENCY RESPONSE PROTOCOL**

The purpose of this protocol is to provide guidance for the medical management of exposure situations.

In the event of a personnel exposure to a hazardous substance or agent:

- Rescue, when necessary, employing proper equipment and methods.
- Give attention to emergency health problems -- breathing, cardiac function, bleeding, and shock.
- Transfer the victim to the medical facility designated in this HASP by suitable and appropriate conveyance (i.e. ambulance for serious events)
- Obtain as much exposure history as possible (a Potential Exposure report is attached).
- If the exposed person is a Tetra Tech NUS employee, call the medical facility and advise them that the patient(s) is/are being sent and that they can anticipate a call from the WorkCare physician. WorkCare will contact the medical facility and request specific testing which may be appropriate. The care of the victim will be monitored by WorkCare physicians. Site officers and personnel should not attempt to get this information, as this activity leads to confusion and misunderstanding.
- Call WorkCare at 1-800-455-6155 (enter Ext. 109), or follow the voice prompt for after hours and weekend notification, and be prepared to provide:
  - Any known information about the nature of the exposure.
  - As much of the exposure history as was feasible to determine in the time allowed.
  - Name and phone number of the medical facility to which the victim(s) has/have been taken.
  - Name(s) of the exposed Tetra Tech NUS, Inc. employee(s).
  - Name and phone number of an informed site officer who will be responsible for further investigations.
  - Fax appropriate information (e.g., MSDS) to WorkCare at (714) 456-2154.
- Contact Corporate Health and Safety Department (Matt Soltis) at 1-800-245-2730.

As environmental data is gathered and the exposure scenario becomes more clearly defined, this information should be forwarded to WorkCare.

WorkCare will compile the results of data and provide a summary report of the incident. A copy of this report will be placed in each victim's medical file in addition to being distributed to appropriately designated company officials.

Each involved worker will receive a letter describing the incident but deleting any personal or individual comments. This generalized summary will be accompanied by a personalized letter describing the individual's findings/results. A copy of the personal letter will be filed in the continuing medical file maintained by WorkCare.

**FIGURE 2-1 (continued)**  
**POTENTIAL EXPOSURE REPORT**

Name: \_\_\_\_\_ Date of Exposure: \_\_\_\_\_

Social Security No.: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Client Contact: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Company Name: \_\_\_\_\_

**I. Exposing Agent**

Name of Product or Chemicals (if known): \_\_\_\_\_

Characteristics (if the name is not known)

Solid      Liquid      Gas      Fume      Mist      Vapor

**II. Dose Determinants**

What was individual doing? \_\_\_\_\_

How long did individual work in area before signs/symptoms developed? \_\_\_\_\_

Was protective gear being used? If yes, what was the PPE? \_\_\_\_\_

Was there skin contact? \_\_\_\_\_

Was the exposing agent inhaled? \_\_\_\_\_

Were other persons exposed? If yes, did they experience symptoms? \_\_\_\_\_

**III. Signs and Symptoms** (check off appropriate symptoms)

**Immediately With Exposure:**

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Nausea / Vomiting

Dizziness

Weakness

**Delayed Symptoms:**

Weakness

Nausea / Vomiting

Shortness of Breath

Cough

Loss of Appetite

Abdominal Pain

Headache

Numbness / Tingling

**IV. Present Status of Symptoms** (check off appropriate symptoms)

Burning of eyes, nose, or throat

Tearing

Headache

Cough

Shortness of Breath

Chest Tightness / Pressure

Cyanosis

Nausea / Vomiting

Dizziness

Weakness

Loss of Appetite

Abdominal Pain

Numbness / Tingling

Have symptoms: (please check off appropriate response and give duration of symptoms)

Improved: \_\_\_\_\_ Worsened: \_\_\_\_\_ Remained Unchanged: \_\_\_\_\_

**V. Treatment of Symptoms** (check off appropriate response)

None: \_\_\_\_\_ Self-Medicating: \_\_\_\_\_ Physician Treated: \_\_\_\_\_

**TABLE 2-1  
EMERGENCY REFERENCE  
NAVAL STATION MAYPORT, FLORIDA**

<b>AGENCY</b>	<b>TELEPHONE</b>
EMERGENCY	<b>911</b>
Fire Department	911 or (904) 270-5333
Base Security	(904) 270-5583 or 5584
Base Medical Clinic (For life threatening emergencies only)	(904) 270-5444
Memorial Health Care Center (for other emergencies)	(904) 858-7500
Poison Control Center	(800) 222-1222
Chemtrec	(800) 424-9300
National Response Center	(800) 424-8802
Base Safety Department	(904) 270-5218
Site Point of Contact, Mr. Jan Bouvier	(904) 270-6730
Public Works Trouble Desk (for problems with utilities)	(904) 542-2122
SOUTHDIV Engineer in Charge Ms. Beverly Washington	(843) 820-5581
Task Order Manager, Mark Peterson	(954) 570-5885
Field Operations Leader, David Siefken	(904) 281-0400
Health and Safety Manager, Matthew M. Soltis, CIH, CSP	(412) 921-8912
Project Health and Safety Officer, James K. Laffey	(412) 921-8678

NOTE: When calling base telephone numbers from within the Base (i.e., from an on-base telephone), dial a zero (0) and the last four digits of the telephone number. For example, to contact the Base Medical Clinic, dial 05444.

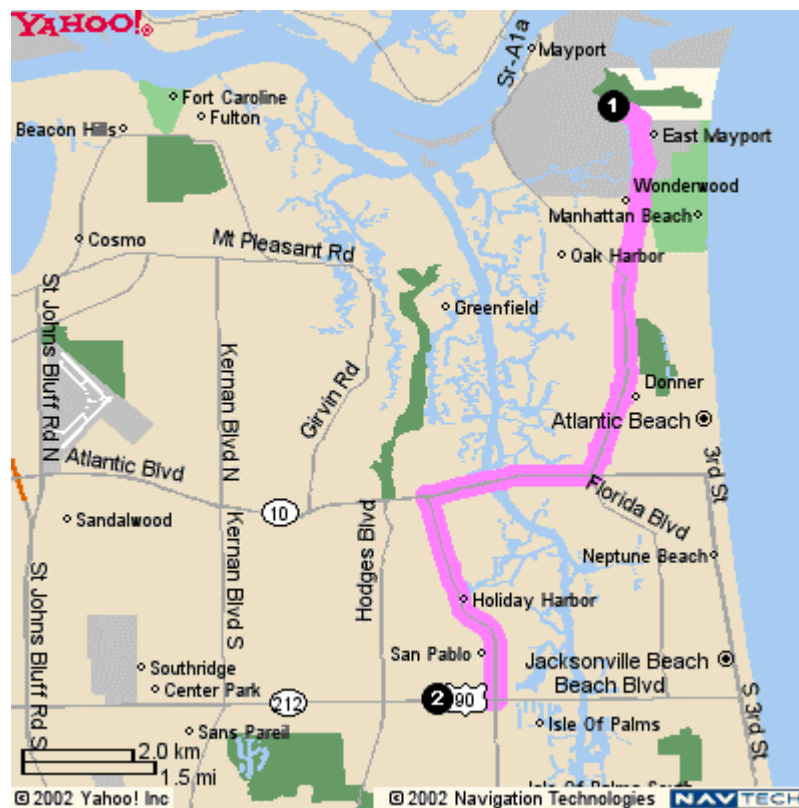


## 2.7 EMERGENCY ROUTE TO HOSPITAL

The Base Medical Clinic should be used for life-threatening emergencies only. It is located in Building 1363 on Massey Avenue. Memorial Health Care Center will be used for medical care beyond basic first aid treatment. Directions to the Center are:

Exit base, take Mayport Road (A1A) to Atlantic Blvd. Take a right onto Atlantic Blvd. across the Intercoastal Waterway. At the first intersection, take a left onto San Pablo Blvd. The Medical Center is at the intersection of San Pablo Blvd. and Beach Blvd (14444 Beach Blvd.). See Figure 2-2 Route to Hospital Map.

**Figure 2-2**  
**Route to**  
**Memorial Health Care Center**



## 2.8 EMERGENCY ALERTING AND ACTION/RESPONSE PROCEDURES

TtNUS personnel will be working in close proximity to each other at NS Mayport. As a result, hand signals, voice commands, and line of site communication will be sufficient to alert site personnel of an emergency. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations.

If an emergency warranting evacuation occurs, the following procedures are to be initiated:

- Initiate the evacuation via hand signals, voice commands, line of site communication, or vehicle horns. The following signals shall be utilized when communication via vehicle horn is necessary:

HELP	three short blasts	■ ■ ■
EVACUATION	three long blasts	■ ■ ■

- Report to the designated refuge point.
- Once non-essential personnel are evacuated, appropriate response procedures will be enacted to control the situation.
- Describe to the FOL (FOL will serve as the Incident Coordinator) pertinent incident details.

In the event that site personnel cannot mitigate the hazardous situation, the FOL and SSO will enact emergency notification procedures to secure additional assistance in the following manner:

Dial 911 and call other pertinent emergency contacts listed in Table 2-1 and report the incident. Give the emergency operator the location of the emergency, the type of emergency, the number of injured, and a brief description of the incident. Stay on the phone and follow the instructions given by the operator. The operator will then notify and dispatch the proper emergency response agencies.

## 2.9 PPE AND EMERGENCY EQUIPMENT

A first-aid kit, eye wash units (or bottles of disposable eyewash solution) and fire extinguishers (strategically placed) will be maintained onsite and shall be immediately available for use in the event of an emergency. This equipment will be located in the field office as well as in each site vehicle. At least one first aid kit supplied with equipment to protect against bloodborne pathogens will also be available on site. Personnel identified within the field crew with bloodborne pathogen and first-aid training will be the only personnel permitted to offer first-aid assistance.

As soon as possible Navy contact Jan Bouvier must be informed of any incident or accident that requires medical attention.

Any pertinent information regarding allergies to medications or other special conditions will be provided to medical services personnel. This information is listed on Medical Data Sheets filed onsite. If an exposure to hazardous materials has occurred, provide hazard information from Table 6-1 to medical service personnel.

### **3.0 SITE BACKGROUND**

#### **3.1 SITE DESCRIPTION**

NS Mayport is in Duval County, Florida, and approximately 16 miles northeast of Jacksonville at the mouth of the St. Johns River. The base was established in 1942 and is primarily involved in the intermediate-level maintenance of equipment, ships, aircraft, and other support units stationed at the facility.

#### **3.2 INVESTIGATION AREAS**

There are three source areas that are located at different locations within the boundaries of NS Mayport. They are as follows:

##### **3.2.1 Building 351**

Building 351 is located at the Fleet Training Center on the northeastern edge of the base and is the former location of a 10,000 aboveground storage tank (AST) and a 500-gallon gasoline underground storage tank (UST).

On July 1, 1999 a diesel fuel surface spill was reported at the Fleet Training Facility, Building 351. The cause of the discharge was reported to be a leaking 1.5-inch diameter, underground distribution pipe containing diesel fuel. The total quantity of the diesel fuel release was unknown. However, approximately 1,140 gallons of free product was recovered between July and August 1999. An excavation was conducted to remove grossly contaminated soils. The fuel impacted an area approximately 14 feet long by 8 feet wide. The horizontal extent of the excavation was limited due to the presence of permanent structures adjacent to the impacted areas. In total, approximately seven tons of diesel contaminated soil was removed from the impacted area. Following the soil excavation a free phase product recovery effort was initiated and a total of 1,140 gallons of fuel oil was recovered during the free product recovery effort.

##### **3.3.2 Building 425**

Building 425 is located at the Bachelors Officers Quarters on the eastern edge of the base, and is the location of a 1,000-gallon aboveground storage tank (AST) used to store heating oil.

Two separate releases occurred involving this AST. The Area 2 release reportedly occurred when a faulty float valve in a day tank associated with a boiler, malfunctioned causing the tank to overfill and fuel to travel through the vent pipe which was connected to the 1000-gallon AST. Area 2 release was located

in a corner on the West Side of Building 425. It was estimated that approximately 700 gallons of heating oil was released at Area 2. After the release, approximately 60 cubic yards of hydrocarbon impacted soil was removed during an initial remedial action at Area 2. However, due to the close proximity to the foundation of the building, all impacted soil was not removed. The assessment areas are located adjacent to the three buildings within the confines of the NS Mayport.

In January 2001 a Site Assessment Report was completed for Building 351. The results of the site assessment indicated that hydrocarbon constituents were detected in soils and groundwater at the site, and free product was present in one monitoring well.

## 4.0 SCOPE OF WORK

This section describes the project tasks that will be performed at NS Mayport. Additionally, each task has been evaluated and the associated hazards and recommended control measures are listed in Table 5-1 of this HASP. If new tasks are to be performed at the site, Table 5-1 and this section will be modified accordingly. Specific tasks to be conducted include, but are not necessarily limited to, the following:

- Mobilization and demobilization
- Multi media sampling
  - Groundwater
  - Subsurface soil
- Monitoring Well Installation
  - Direct-push Technology (DPT)
  - Hollow Stem Auger (HSA)
- Aggressive Fluid Vapor Recovery (AFVR)
- Decontamination of sampling equipment
- Surveying
- Investigative-Derived Waste (IDW) management

The above listing represents a summarization of the tasks as they apply to the scope and application of this HASP. For more detailed description of the associated tasks refer to the Work Plan (WP). If additional tasks are determined to be necessary, this HASP will be amended and a hazard evaluation of the additional tasks performed.

## **5.0 TASKS/HAZARDS/ASSOCIATED CONTROL MEASURES SUMMARIZATION**

Table 5-1 of this section serves as the primary portion of the site-specific HASP which identifies the tasks that are to be performed as part of the scope of work. This table will be modified and incorporated into this document as new or additional tasks are performed at the site. The anticipated hazards, recommended control measures, air monitoring recommendations, required Personal Protective Equipment (PPE), and decontamination measures for each site task are discussed in detail. This table and the associated control measures shall be changed, if the scope of work, contaminants of concern, or other conditions change.

Through using the table, site personnel can determine which hazards are associated with each task and at each site and what associated control measures are necessary to minimize potential exposure or injuries related to those hazards. The table also assists field team members in determining which PPE and decontamination procedures to use based on proper air monitoring techniques and site-specific conditions.

As discussed earlier, a Health and Safety Guidance Manual accompanies this table and HASP. The manual is designed to further explain supporting programs and elements for other site -specific aspects as required by 29 CFR 1910.120. The Guidance Manual should be referenced for additional information regarding air monitoring instrumentation, decontamination activities, emergency response, hazard assessments, hazard communication and hearing conservation programs, medical surveillance, PPE, respiratory protection, site control measures, standard work practices, and training requirements. Many Tetra Tech NUS SOPs are also provided in this Guidance Manual.

Safe Work Permits issued for Exclusion Zone activities (See Section 10.10) will use elements defined in Table 5-1 as it's primary reference. The FOL and/or the SSO completing the Safe Work Permit will add additional site-specific information. In situations where the Safe Work Permit is more conservative than the direction provided in Table 5-1 due to the incorporation of site-specific elements, the Safe Work Permit will be followed.

### **5.1 GENERAL SAFE WORK PRACTICES**

In addition to the task-specific work practices identified on Table 5-1, the follow these safe work practices when conducting work involving known and unknown site hazards. These safe work practices establish a pattern of general precautions and measures for reducing risks associated with hazardous site operations.

- Refrain from eating, drinking, chewing gum or tobacco, taking medication, or smoking in contaminated or potentially contaminated areas or where the possibility for the transfer of contamination exists.
- Wash hands and face thoroughly upon leaving a contaminated or suspected contaminated area.
- Avoid contact with potentially contaminated substances.
- Rehearse unfamiliar operations prior to implementation.
- Use the “buddy system”. Establish hand signals or other means of emergency communication in case two-way radio failure.
- Maintain visual contact with each other and with other on-site team members by remaining in close proximity in order to assist each other in case of emergency.
- Establish appropriate decontamination procedures for leaving the site.
- Immediately report injuries, illnesses, and unsafe conditions, practices, and equipment to the Site Safety Officer (SSO).
- Observe coworkers for signs of heat stress.

## **5.2 DRILLING SAFE WORK PRACTICES**

The following safe work practices are to be followed when working in or around the drill rig operations.

### **5.2.1 Before Drilling**

- Identify underground utilities and buried structures before drilling. Use the Utility Locating and Excavation Clearance Standard Operating Procedure provided in Attachment II.
- A competent person (the SSO or designee) will inspect drill rigs prior to the acceptance of the equipment at the site and prior to the use of the equipment. Repairs or deficiencies identified will be corrected prior to use. See the Equipment Inspection Checklist provided in Attachment III. Inspection frequencies will be once every 10-day shift or following repairs.
- The work area around the point of operation will be graded to the extent possible to remove any trip hazards near or surrounding operating equipment.
- The driller’s helper will establish an equipment staging and laydown plan. The purpose of this is to keep the work area clear of clutter and slips, trips, and fall hazards. Mechanisms to secure heavy objects such as drill flights will be provided to avoid the collapse stacked equipment.
- Potentially contaminated tooling will be wrapped in polyethylene sheeting for storage and transport to the centrally located decontamination unit.



### **5.2.2 During Drilling**

- Minimize contact to the extent possible with contaminated tooling and environmental media.
- Support functions (sampling and screening stations) will be maintained a minimum distance from the drill rig of the height of the mast plus 5 feet to remove these activities from within physical hazard boundaries.
- Only qualified operators and knowledgeable ground crew personnel will participate in the operation of the drill rig.
- In order to minimize contact with potentially contaminated tooling and media and to minimize lifting hazards, multiple personnel should move auger flights and other heavy tooling.
- Only personnel absolutely essential to the work activity will be allowed in the exclusion zone. Site visitors will be escorted.

### **5.2.3 After Drilling**

- Equipment used within the exclusion zone will undergo a complete decontamination and evaluation by the SSO to determine cleanliness before moving to the next location, exiting the site, or before down time for maintenance.
- Motorized equipment will be fueled prior to the commencement of the day's activities. During fueling operations, equipment will be shut down and bonded to the fuel provider.
- When not in use, drill rigs will be shut down and emergency brakes set. If necessary, wheels will be chocked to control movement.
- Areas subjected to subsurface investigative methods will be restored to equal or better condition than original to remove any contamination brought to the surface and to remove any physical hazards. In situations where these hazards cannot be removed, these areas will be barricaded to minimize the impact on field crews working in the area.

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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are optional as conditions and or the FOL or SSO require.)</i>	Decontamination Procedures
Mobilization/ Demobilization	<p><i>Physical Hazards:</i></p> <p>1) Lifting (strain/muscle pulls) 2) Pinches and compressions; Cuts and lacerations 3) Slips, trips, and falls 4) Ambient temperature extremes (Heat/cold stress)</p> <p><i>Natural hazards:</i></p> <p>5) Insect/animal bites and stings, poisonous plants, etc. 6) Inclement weather</p>	<p>1) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. See Section 6.2.2 of this HASP for further instructions. 2) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. If hand tools (brush hooks, machetes, etc.) are necessary to clear sample access pathways, the following precautions are recommended: - Handles are to be of good construction (no cracks, splinters, loose heads/cutting apparatus. - Cutting tools are to be maintained. Blades shall be sharp without knicks and gouges in the blade. - Hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals when not in use. - Personnel will maintain a 10-foot perimeter around persons clearing brush. 3) Preview work locations for unstable/uneven terrain. 4) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding Heat/cold stress is provided in Section 4 of the Health and Safety Guidance Manual. 5) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSO. 6) Suspend or terminate operations until directed otherwise by SSO.</p>	Not required	<p>Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Steel toe safety shoes or boots - Safety glasses - Hardhat (when overhead hazards exists, or identified as an operation requirement) - Reflective vest for high traffic areas - Hearing protection for high noise areas, or as directed on an operation by operation scenario.</p>	Not required
<p>Soil borings using Hollow Stem Auger (HSA) or Direct Push Technology (DPT).</p> <p>This task also includes monitoring well installation, development, and purging.</p>	<p><i>Chemical Hazards:</i></p> <p>1) Primary contaminants include VOCs such as Benzene, Ethylbenzene, Xylene and Naphthalene. SVOCs associated with Diesel Fuel.</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas or onto persons</p> <p><i>Physical hazards:</i></p> <p>3) Heavy equipment hazards (pinch/compression points, rotating equipment, hydraulic lines, etc.) 4) Noise in excess of 85 dBA 5) Energized systems (contact with underground or overhead utilities) 6) Lifting (strain/muscle pulls) 7) Slip, trips, and falls 8) Vehicular and foot traffic 9) Ambient temperature extremes (heat or cold stress) 10) Eye and foot hazards</p> <p><i>Natural hazards:</i></p> <p>11) Insect/animal bites and stings, poisonous plants, etc. 12) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identified PPE to control exposures to potentially contaminated media (air, water, soils, etc.). Generation of dusts and contact with dust/dirt should be minimized whenever possible. If airborne dusts are observed, area-wetting methods will be used. If area-wetting methods are not feasible, termination of activities will be used to minimize exposure to excessive airborne dusts. 2) Decontaminate equipment and supplies between boreholes and prior to leaving the site. 3) The following equipment and standard operating procedures guidelines will be used: - Inspected in accordance with Federal safety and transportation guidelines, OSHA (1926.600,.601,.602), and manufacturers design and documented as such using Equipment Inspection Sheet (see Attachment III of this HASP). - Operated by knowledgeable operators and ground crew. - Only manufacturer approved equipment may be used in conjunction with equipment repair procedures. - Personnel not directly supporting the soil boring operation will remain at least 25 feet from the point of operation. - Loose clothing/protective equipment will be secured to avoid possible entanglement. - Hand signals (if necessary) will be established prior to the commencement of soil boring activities. - A remote sampling device must be used to sample drill cuttings near rotating tools. - Work areas will be kept clear of clutter. - Personnel will be instructed in the location and operations of the emergency shut off device(s). This device will be tested initially (and then periodically) to ensure its operational status. - Areas will be inspected prior to the movement of drill rigs and support vehicles to eliminate any physical hazards. This will be the responsibility of the FOL and/or SSO. 4) Hearing protection will be used during subsurface activities. Refer to Section 6 of the Guidance Manual for further information. 5) Utility clearances shall be obtained, in writing, prior to subsurface activities (contact Jan Bouvier). Prior to any subsurface investigations, the locations of underground utilities will be identified and marked. Refer to SOP for Utility Locating and Excavation Clearance Attachment II. 6) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 7) Preview work locations for unstable/uneven terrain. 8) Traffic and equipment considerations are to include the following: - Establish safe zones of approach. - Activities are to be conducted consistent with area traffic requirements. 9) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual. 10) Avoid recognized eye and foot hazards. Wear PPE. 11) Avoid nesting areas, use commercially available repellents. Report potential hazards to the SSO. 12) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of VOCs, SVOCs, and any other detectable contaminants. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location which may impact the field crew will require the following actions:</p> <p>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.</p> <p>- Work may only resume if airborne readings in worker breathing zone return to below 10 ppm. If elevated readings in the worker's breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</p> <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be controlled to minimize the potential for inhalation of contaminated dusts and particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p> <p>Where the utility clearance cannot be determined, subsurface activities shall proceed with extreme caution using a magnetometer for periodic down-hole surveys every 2 feet to a depth of at least 10 feet.</p>	<p>Subsurface operations are to be initiated in Level D protection. Level D protection constitutes the following minimum protection - Standard field attire (Sleeved shirt; long pants) - Safety shoes (Steel toe) - Safety glasses - Hardhat - Nitrile gloves or leather gloves with surgical style inner gloves - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential exists for soiling work attire. - Hearing protection during drilling or for other high noise areas as directed by the SSO. - Reflective vest for traffic areas</p> <p>Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued and reviewed at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p>Personnel Decontamination - Will consist of a soap/water wash and rinse for reusable protective equipment (e.g., gloves). This function will take place at an area adjacent to the drilling operations bordering the support zone.</p> <p>This decontamination procedure for Level D protection will consist of - Equipment drop - Outer coveralls or boot covers removal, as applicable - Soap/water wash and rinse of reusable outer gloves, as applicable - Removal, segregation, and disposal of non-reusable PPE in bags/containers provided - Wash hands and face, leave contamination reduction zone.</p>

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Tasks/Operation/ Locations	Anticipated Hazards	Recommended Control Measures	Hazard Monitoring	Personal Protective Equipment <i>(Items in italics are deemed optional as conditions or the FOL or SSO dictate.)</i>	Decontamination Procedures
Multi-media sampling, including:  -Ground Water -Sub-surface Soils -IDW  This task includes Aggressive Fluid Vapor Recovery (AFVR)	<i>Chemical Hazards:</i>  1) Primary contaminants include VOCs such as Benzene, Ethylbenzene, Xylene and Naphthalene. SVOCs associated with Diesel Fuel.  See Table 6-1 for more information on the chemicals of concern.  2) Transfer of contamination into clean areas  <i>Physical Hazards:</i>  3) Lifting (strain/muscle pulls) 4) Pinches and compressions 5) Slips, trips, and falls 6) Ambient temperature extremes (cold stress)  <i>Natural Hazards:</i>  7) Insect/animal bites and stings, poisonous plants, etc. 8) Inclement weather	1) Use contamination avoidance, good work hygiene practices, PPE, and decontamination procedures to control exposures to media (water, soils, etc.). 2) Decontaminate equipment and supplies between sample locations and prior to leaving the site. 3) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 4) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. 5) Preview work locations for unstable/uneven terrain; Follow establish trails (cleared and marked) access ways to identified 6) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold stress is provided in Section 4 of the Health and Safety Guidance Manual. 7) Avoid nesting areas, use repellents where approved. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual. 8) Suspend or terminate operations until directed otherwise by the SSO.	A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source (open well or area in vicinity of free product recovery) or downwind location(s) which may impact operations crew will require the following actions:  - Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.  - Work may only resume if airborne readings in worker breathing zone return to below 10 ppm levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.  Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.	Level D protection will be utilized for the initiation of sampling activities.  Level D - (Minimum Requirements) - Standard field attire (Sleeved shirt; long pants) - Safety glasses - Surgical style gloves (double-layered if necessary) - Reflective vest for high traffic areas - Hardhat (when overhead hazards exists, or identified as a operation requirement) - Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists. - Hearing protection for high noise areas, or as directed on an operation by operation scenario. - Snake chaps shall be worn in areas of known or suspected snake infestation.  Pants should be taped to boots to control access by ticks and other crawling insects.  Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	Personal decontamination will vary based on the type of sampling conducted. These are as follows: Sampling surface water, groundwater, sediments, and seeps the following provisions will apply - Upon completion of the sampling dedicated tubing, etc. will be bagged for transport back to the central decontamination area. - PPE (gloves) will be washed, removed and also bagged for disposal. - Handi-Wipes or similar product will be used to clean hands prior to moving to the next location, when access to soap and water is not feasible due to the location. - Hands and face washing will be conducted upon arrival back at the central decontamination unit prior to scheduled breaks and when leaving the site. Clothing examinations should be conducted to remove ticks and other crawling insects upon leaving the sample areas  Equipment Decontamination Equipment used in remote sampling locations will be brought back to the central decontamination area for decontamination and re-use or decontamination and gross removal of contamination prior to disposal.
Decontamination of Sampling and Heavy Equipment	<i>Chemical Hazards:</i>  1) Primary contaminants include VOCs such as Benzene, Ethylbenzene, Xylene and Naphthalene. SVOCs associated with Diesel Fuel.  See Table 6-1 for more information on the chemicals of concern.  2) Decontamination fluids – Liquinox (detergent), acetone or isopropanol  <i>Physical Hazards:</i>  3) Lifting (muscle strains and pulls) 4) Noise in excess of 85 dBA 5) Flying projectiles 6) Vehicular and foot traffic 7) Ambient temperature extremes (heat stress) 8) Slips, trips, and falls 9) Eye and foot hazards  <i>Natural Hazards:</i>  10) Inclement weather	1) and 2) Use protective equipment to minimize contact with site contaminants and hazardous decontamination fluids. Obtain manufacturer's MSDS for any decontamination solvents used onsite. Use appropriate PPE as identified on MSDS. Chemicals used must be listed on the Chemical Inventory for the site, and site activities must be consistent with the Hazard Communication section of the Health and Safety Guidance Manual (Section 5). 3) Use multiple persons where necessary for lifting and handling sampling equipment for decontamination purposes. 4) Wear hearing protection when operating pressure washer. Refer to Section 6 of the Guidance Manual for further information. 5) Use eye and face protective equipment when operating pressure washer. Other personnel must be restricted from the area. 6) Traffic and equipment considerations are to include the following: Activities are to be conducted consistent with the area requirements. 7) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual. 8) Preview work locations for unstable/uneven terrain. 9) Avoid recognized eye and foot hazards. Wear PPE. 10) Suspend or terminate operations until directed otherwise by SSO	Use visual observation, and real-time monitoring instrumentation to ensure equipment has been properly cleaned of contamination and dried. After decon is completed, screen equipment with a PID/FID. If any elevated readings (i.e., above background) are observed, perform decon again and rescreen. Repeat until no elevated PID/FID readings are noted.	<b>For Heavy Equipment</b> - This applies to high pressure soap/water, steam cleaning wash and rinse procedures.  Level D Minimum requirements - - Standard field attire (Long sleeve shirt; long pants) - Safety shoes (Steel toe/shank) - Chemical resistant boot covers - Nitrile outer gloves - PVC Rainsuits or PE or PVC coated Tyvek - Safety glasses underneath a splash shield - Hearing protection (plugs or muffs)  <b>For sampling equipment</b> - the following PPE is required:  Level D Minimum requirements - - Standard field attire (Long sleeve shirt; long pants) - Steel toe safety shoes or boots - Nitrile outer gloves - Safety glasses  In the event of over spray of chemical decontamination fluids use PVC Rain suits or PE or PVC coated Tyvek as necessary.  Note: The Safe Work Permit(s) for this task (see Attachment IV) will be issued and reviewed at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.	Personnel Decontamination will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of: - Equipment drop - Soap/water wash and rinse of outer boots and gloves, as applicable - Soap/water wash and rinse of the outer splash suit, as applicable - Disposable PPE will be removed and bagged.  <b>Equipment Decontamination</b> – Conduct at a centralized decontamination pad utilizing steam or pressure washers. Heavy equipment will have the wheels and tires cleaned along with any loose debris removed, prior to transporting to the central decontamination area. Site vehicles will be restricted to the exclusion zones, or have their wheels/tires sprayed off as not to track mud onto the roadways servicing this installation. Roadways shall be cleared of any debris resulting from the onsite activity.  <b>Sampling Equipment Decontamination</b> - Sampling equipment will be decontaminated as per the requirements in the Sampling and Analysis Plan and/or Work Plan.  MSDS for decon solutions (Alconox, isopropanol, etc.) will be obtained and used to determine proper handling / disposal methods and protective measures (PPE, first-aid, etc.).  Equipment used in the exclusion zone will require a complete decontamination between locations and prior to removal from the site. The FOL or the SSO will be responsible for evaluating equipment arriving and leaving the site. No equipment will be authorized access or exit without this evaluation.

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IDW management and moving IDW drums to storage areas	<p><b>Chemical Hazards:</b></p> <p>1) Primary contaminants include VOCs such as Benzene, Ethylbenzene, Xylene and Naphthalene. SVOCs associated with Diesel Fuel.</p> <p>See Table 6-1 for more information on the chemicals of concern.</p> <p>2) Transfer of contamination into clean areas</p> <p><b>Physical Hazards:</b></p> <p>3) Noise in excess of 85 dBA 4) Lifting (muscle strains/pulls) 5) Pinches and compressions 6) Slip, trips, and falls 7) Vehicular and foot traffic 8) Ambient temperature extremes (heat/cold stress) 9) Eye and foot hazards</p> <p><b>Natural Hazards:</b></p> <p>10) Insect/animal bites and stings, poisonous plants, etc. 11) Inclement weather</p>	<p>1) Use real-time monitoring instrumentation, action levels, and identify PPE to control exposures to potentially contaminated media (e.g. air, water, soils). 2) Decontaminate equipment and supplies, if they become contaminated, between locations and prior to leaving the site. 3) When working near heavy equipment, use hearing protection. Refer to Section 6 of the Guidance Manual for further information. 4) Use machinery or multiple personnel for heavy lifts. Use proper lifting techniques. 5) Keep any machine guarding in place. Avoid moving parts. Use tools or equipment where necessary to avoid contacting pinch points. 6) Preview work locations for unstable/uneven terrain. 7) Traffic and equipment considerations are to include the following: - Secure loose articles to avoid possible entanglement. - Activities are to be conducted consistent with the Base requirements. 8) Wear appropriate clothing for weather conditions. Provide acceptable shelter and liquids for field crews. Additional information regarding cold/heat stress concerns is provided in Section 4 of the TtNUS Health and Safety Guidance Manual. 9) Avoid recognized eye and foot hazards. Wear appropriate PPE. 10) Avoid nesting areas, use commercially available insect repellents. Report potential hazards to the SSO. 11) Suspend or terminate operations until directed otherwise by SSO.</p>	<p>A direct reading Photoionization Detector w/10.6 eV lamp or Flameionization Detector (FID) will be used to screen samples and to detect the presence of any potential volatile organics. Source monitoring of the borehole will be conducted at regular intervals to be determined by the SSO. Positive sustained results at a source or downwind location(s) which may impact operations crew will require the following actions:</p> <ul style="list-style-type: none"><li>- Monitor the breathing zone of at-risk and downwind employees. Any sustained readings (greater than 1 minute in duration) above 10 ppm in the breathing zone of the at-risk employees requires site activities to be suspended and site personnel to report to an unaffected area.</li><li>- Work may only resume if airborne readings in worker breathing zone return to below 10 ppm levels. If elevated readings in worker breathing zone persist, the PHSO and HSM will be contacted to determine necessary actions and levels of protection.</li></ul> <p>Site contaminants may adhere to or be part of airborne dusts or particulates generated during site activities. Generation of dusts should be minimized to the greatest extent possible to avoid inhalation of contaminated dusts or particulates. Evaluation of dust concentrations will be performed by observing work conditions for visible dust clouds. Potential exposure to contaminated dust will be controlled using water suppression, by avoiding dust plumes, or evacuating the operation area until dust subsides.</p>	<p>Level D protection will be utilized for the initiation of sampling activities.</p> <p>Level D - (Minimum Requirements)</p> <ul style="list-style-type: none"><li>- Standard field attire (long sleeve shirt; long pants)</li><li>- Tyvek coveralls and disposable boot covers if surface contamination is present or if the potential for soiling work attire exists.</li><li>- Cotton/leather work gloves with surgical style inner gloves</li><li>- Steel toe safety shoes</li><li>- Safety glasses</li><li>- Hardhat (when overhead hazards exists, or identified as a operation requirement)</li><li>- Reflective vest for high traffic areas</li><li>- Hearing protection for high noise areas, or as directed on an operation by operation scenario.</li></ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (see Attachment IV) will be issued and reviewed at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> will consist of a soap/water wash and rinse for reusable outer protective equipment (boots, gloves, PVC splash suits, as applicable). The decon function will take place at an area adjacent to the site activities. This procedure will consist of:</p> <ul style="list-style-type: none"><li>- Equipment drop</li><li>- Soap/water wash and rinse of outer boots and gloves, as applicable</li><li>- Soap/water wash and rinse of the outer splash suit, as applicable</li><li>- Disposable PPE will be removed and bagged.</li></ul>
Surveying – Geographical	<p><b>Chemical hazards:</b></p> <p>Significant exposure to site contaminants is anticipated to be unlikely given the nature of this task.</p> <p><b>Physical Hazards:</b></p> <p>1) Slips, trips, and falls</p> <p>2) Struck by</p> <p>3) Ambient temperature extremes (heat/cold stress)</p> <p><b>Natural Hazards:</b></p> <p>4) Inclement weather</p> <p>5) Insect/animal bites or stings, poisonous plants, etc.</p>	<p>1) Preview work locations and site lines for uneven and unstable terrain. Clear necessary vegetation, establish temporary means for traversing hazardous terrain (i.e., rope ladders, etc.) 2) If hand tools (brush hooks, machetes, etc.) are necessary to clear and carry lines and bench marks to the area of operation the following precautions are recommended: - Ensure handles are of good construction (no cracks, splinters, loose heads/cutting apparatus). - Ensure cutting tools are maintained. Blades shall be sharp without knicks and gouges in the blade. - Hand tools (brush hooks, machetes, etc.) with cutting blades shall be provided with a sheath to protect individuals, when not in use. - Personnel will maintain a 10-foot perimeter around persons clearing brush. 3) Wear appropriate clothing for weather conditions. - Provide acceptable shelter and replacement liquids for field crews as relief from excessive ambient temperatures. - Under conditions of elevated temperatures allow for periods of acclimatization. 4) Suspend or terminate operations until directed otherwise by SSO 5) Avoid nesting areas, use repellents. Report potential hazards to the SSO. Follow guidance presented in Section 4 of the Health and Safety Guidance Manual.</p>	<p>Air monitoring is not required given the likelihood that airborne contaminants will be present. The potential for exposure to site contaminants during this activity is considered minimal.</p>	<p>Surveying activities shall be performed in Level D protection</p> <p>Level D Protection consists of the following:</p> <ul style="list-style-type: none"><li>- Standard field dress including sleeved shirt and long pants</li><li>- Shoes rugged lug sole for traction</li><li>- Work gloves shall be worn when clearing brush.</li><li>- <i>Safety glasses, hard hats (if working near machinery, overhead hazards, or clearing brush)</i></li><li>- <i>Snake chaps for heavily wooded area where encounters are likely.</i></li><li>- <i>Tyvek coveralls may be worn to provide additional protection against poisonous plants and insects, particularly ticks.</i></li><li>- <i>Reflective or blaze orange vests should be worn when working along traffic thoroughfares.</i></li></ul> <p><b>Note:</b> The Safe Work Permit(s) for this task (See Attachment IV) will be issued at the beginning of each day to address the tasks planned for that day. As part of this task, additional PPE may be assigned to reflect site-specific conditions or special considerations or conditions associated with any identified task.</p>	<p><b>Personnel Decontamination</b> - A structured decontamination is not required as the likelihood of encountering contaminated media is considered remote. However, survey parties should inspect themselves and one another for the presence of ticks when exiting wooded areas, grassy fields, etc. This action will be employed to stop the transfer of these insects into vehicles, homes, and offices. In addition, early detection shall provide for early removal.</p>

## **6.0 HAZARD ASSESSMENT**

The following section provides information regarding the chemical, physical, and natural hazards anticipated to be present during the activities to be conducted. Table 6-1 provides information related to chemical constituents that have been identified by analysis or are suspected to be present at the site based on historical data. Specifically, toxicological information, exposure limits, symptoms of exposure, physical properties, and air monitoring and sampling data are discussed in the table.

### **6.1 CHEMICAL HAZARDS**

The potential health hazards associated with include inhalation, ingestion, and dermal contact of various contaminants that may be present in groundwater. The following has been identified as the primary class of these contaminants, including the specific compound(s) of interest:

- Volatile Organic Compounds (VOCs), specifically benzene, ethylbenzene, xylenes, and naphthalenes.
- Semi-Volatile Organic Compounds (SVOCs), including Total Petroleum Hydrocarbons (TPHs) which are associated with Diesel Fuel.

Table 6-1 provides information on the substances likely to be present at the site to be investigated. Included is information on the toxicological, chemical, and physical properties of these substances. It is anticipated that the greatest potential for exposure to site contaminants is during intrusive activities (e.g., monitoring well installation, sampling). Exposure to these compounds is most likely to occur through ingestion and inhalation of contaminated water, or hand-to-mouth contact during intrusive activities. For this reason, PPE and basic hygiene practices (washing face and hands before leaving site) will be extremely important. Inhalation exposure will be avoided by using appropriate PPE and engineering controls where necessary. Significant exposure via inhalation is not anticipated during the planned scope of work.

**TABLE 6-1**  
**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA**  
**NAVAL STATION MAYPORT, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Diesel Range Organics (as Diesel Fuel No.2-D)	Mixture	Components of this substance will be detected readily; however, no documentation exists as to the relative response ratio of either PID or FID.	Air sampling use charcoal tube as a collection media; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with NIOSH Method #1550.	OSHA/NIOSH/ACGIH: 5 mg/m <sup>3</sup> as mineral oil mist. In addition NIOSH and ACGIH establish 10 mg/m <sup>3</sup> as a STEL.	Kerosene odor  <b>Recommended air-purifying cartridges:</b> Organic vapor  <b>Recommended gloves:</b> Nitrile	<b>Boiling Pt:</b> <170-400°F; 77-204°C <b>Melting Pt:</b> Not available <b>Solubility:</b> Negligible <b>Flash Pt:</b> 125°F; 52°C <b>LEL/LFL:</b> 0.6% <b>UEL/UFL:</b> 7.5% <b>Vapor Density:</b> >5 <b>Vapor Pressure:</b> <1 mmHg @ 70°F; 21°C <b>Specific Gravity:</b> 0.86 <b>Incompatibilities:</b> strong oxidizers, halogens, and hypochlorites <b>Appearance and odor:</b> Colorless to amber with a kerosene odor	Prolonged or repeated exposures to this product may cause skin and eye irritation. Because of the defatting capabilities, this exposure may lead to a dermatitis condition. High vapor concentrations are irritating to the eyes and respiratory tract. Exposure to high airborne concentrations may result in narcotic effects, including dizziness, headaches, and anesthetic to unconsciousness. High concentrations in a confined space may adequately displace oxygen thereby resulting in suffocation.
Benzene	71-43-2	PID: I.P 9.24 eV, 100% response with PID and 10.6 eV lamp.  FID: 150% relative response ratio with FID.	Air sample using 2 mil Tedlar sample bags or charcoal tube with carbon disulfide desorption. Sampling and analytical protocol in accordance with NIOSH Method # 3700 or #1500 and OSHA 07.	OSHA: 1 ppm 5 ppm (STEL) See 29 CFR 1910.1028  ACGIH: 10 ppm NIOSH: 0.1 ppm  IDLH: 500 ppm	Inadequate - Odor threshold 1.4-120 ppm. The use of half-face air-purifying respirators with organic vapor cartridge up to 10 ppm is acceptable despite the inadequate warning properties, providing cartridges are changed at the beginning of each shift.  <b>Recommended gloves:</b> Butyl/neoprene blend - >8.00 hrs; Silver shield as a liner - >8.00 hrs; Viton - >8.00 hrs	<b>Boiling Pt:</b> 176°F; 80°C <b>Melting Pt:</b> 42°F; 5.5°C <b>Solubility:</b> 0.07% <b>Flash Pt:</b> 12°F; -11°C <b>LEL/LFL:</b> 1.2% <b>UEL/UFL:</b> 7.8% <b>Vapor Density:</b> 2.77 <b>Vapor Pressure:</b> 75 mmHg <b>Specific Gravity:</b> 0.88 <b>Incompatibilities:</b> Strong oxidizers, fluorides, perchlorates, and acids <b>Appearance and Odor:</b> Colorless to a light yellow liquid with an aromatic odor	Overexposure may result in irritation to the eyes, nose, throat, and respiratory system. CNS effects include giddiness, lightheadedness, headaches, staggered gait, fatigue, and lassitude and depression. Additional effects may include nausea, difficulty breathing, and intoxication. Long duration exposures may result in respiratory collapse. May cause damage to the blood forming organs and may cause a form of cancer called leukemia. The ACGIH, IARC, and OSHA list benzene as a carcinogen.
Ethylbenzene	100-41-4	PID: I.P 8.76, High response with PID and 10.6 eV lamp.  FID: 100% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #07 or NIOSH Method #1501 Aromatic Hydrocarbon.	ACGIH; NIOSH: 100 ppm; 125 ppm STEL  OSHA: 100 ppm  IDLH: 800 ppm	Adequate - Can use air-purifying respirator with organic vapor cartridge up to 800 ppm.  <b>Recommended gloves:</b> Neoprene or nitrile w/ silver shield when potential for saturation; Teflon >3.00 hrs	<b>Boiling Pt:</b> 277°F; 136°C <b>Melting Pt:</b> -139°F; -95°C <b>Solubility:</b> 0.01% <b>Flash Pt:</b> 55°F; 13°C <b>LEL/LFL:</b> 1.0% <b>UEL/UFL:</b> 6.7% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 10 mmHg @ 79°F; 26°C <b>Specific Gravity:</b> 0.87 <b>Incompatibilities:</b> Strong oxidizers <b>Appearance and odor:</b> Colorless liquid with an aromatic odor. Odor Threshold of 0.092-0.60.	Regulated primarily because of its potential to irritate the eyes and respiratory system. In addition, effects of overexposure may include headaches, narcotic effects, CNS changes (i.e., coordination impairment, impaired reflexes, tremoring) difficulty in breathing, possible chemical pneumonia, and potentially respiratory failure or coma.

**TABLE 6-1**  
**CHEMICAL, PHYSICAL, AND TOXICOLOGICAL DATA**  
**NAVAL STATION MAYPORT, FLORIDA**

Substance	CAS No.	Air Monitoring/Sampling Information		Exposure Limits	Warning Property Rating	Physical Properties	Health Hazard Information
Naphthalene	91-20-3	PID: I.P. 8.12 eV, relative response ratio unknown.  No information was found as to the relative response for FID, however it is certain it is detectable at a high response.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol in accordance with OSHA Method #35 or NIOSH Method #1501.	OSHA; NIOSH; ACGIH: 10 ppm  NIOSH; ACGIH: have established a STEL of 15 ppm.  IDLH: 250 ppm	Odor Threshold 0.038 ppm, Adequate - Use an air purifying respirator with organic vapors and dust/mists cartridges for concentrations up to 250 ppm.  <b>Recommended glove:</b> Nitrile >6.00 hrs; Neoprene >6.00 hrs	<b>Boiling Pt:</b> 424°F; 218°C <b>Melting Pt:</b> 176°F; 80°C <b>Solubility:</b> 0.003% <b>Flash Pt:</b> 174°F; 79°C <b>LEL/LFL:</b> 0.9% <b>UEL/UFL:</b> 5.9% <b>Vapor Density:</b> Not available <b>Vapor Pressure:</b> 1 mmHg <b>Specific Gravity:</b> 1.15 <b>Incompatibilities:</b> Strong oxidizers, chromic anhydride <b>Appearance and odor:</b> Colorless to brown solid with and odor of mothballs	Overexposure to this substance may result in irritation to the eyes, headache, confusion, excitement, nausea, vomiting, abdominal pain, irritation of the bladder, profuse sweating, jaundice, blood in the urine, renal (kidney shutdown), and dermatitis. Prolonged or chronic exposure may further cause optical neuritis, and corneal damage. Target organs are listed as eyes, blood, liver, kidneys, skin, red blood cells, and central nervous system.
Xylene All isomers o-, m-, p-	1330-20-7	PID: I.P. 8.56 eV, High response with PID and 10.6 eV lamp.  FID: 110% response with FID.	Air sample using charcoal tube; carbon disulfide desorption; GC/FID detection. Sampling and analytical protocol shall proceed in accordance with OSHA 07, or NIOSH Method 1500.	ACGIH, & NIOSH: 100 ppm, 150 ppm STEL  OSHA: 100 ppm  IDLH: 900 ppm	Adequate - Odor thresholds for the following isomers: 0.6 m-; 5.4 p-; 20 o- ppm. Can use air-purifying respirator with organic vapor cartridge up to 9 00 ppm concentrations.  <b>Recommended gloves:</b> PV Alcohol >12.67 hrs; Viton >8.00 hrs; CPE >1.00 hr; Butyl 0.87 hrs; Nitrile is acceptable for limited operations and contact (>0.20 hrs)	<b>Boiling Pt:</b> 269-281°F; 132-138°C <b>Melting Pt:</b> -13o/-54m/56p°F; -25o/-48m/13p °C <b>Solubility:</b> 0.02 % <b>Flash Pt:</b> 81-90°F; 27-32°C <b>LEL/LFL:</b> 0.9% <b>UEL/UFL:</b> 7.0% <b>Vapor Density:</b> 3.66 <b>Vapor Pressure:</b> 7-9 mmHg @ 70°F; 21°C <b>Specific Gravity:</b> 0.86-0.88 <b>Incompatibilities:</b> Strong oxidizers and strong acids <b>Appearance and odor:</b> Colorless liquid with an aromatic odor.	Effects may of overexposure include irritation at all points of contact, CNS changes (i.e. dizziness, excitement, drowsiness, incoherent, staggering gait), difficulty in breathing, pulmonary edema, and possibly respiratory failure.  Chronic effects may include dermatitis and cornea vacuolization.



## **6.2 PHYSICAL HAZARDS**

The physical hazards that may be present during the performance of site activities are summarized below:

- Slips, trips, and falls
- Lifting (strain/muscle pulls)
- Ambient temperature extremes (heat stress)
- Pinches and compressions
- Vehicular traffic

These physical hazards are discussed in Table 5-1 as applicable to each site task. Further, these hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual.

### **6.2.1 Heavy Equipment Hazards**

Often the hazards associated with drilling operations such as pinch/compression points, rotating equipment, etc. are the most dangerous to be encountered during site activities. The SSO will discuss safe drilling procedures as part of site-specific training and/or during daily safety meetings using Safe Work Permits (Figure 9-1) presented in this HASP. The following rules will apply to drilling operations:

- Site personnel will be aware of the location and operation of this equipment.
- Each drill rig must be equipped with emergency stop devices which will be tested daily to ensure that they are operational.
- Long handled shovels or equivalent shall be used to clear cuttings from the borehole and rotating equipment.

Additional requirements during drilling activities are discussed in Table 5-1. The SSO will thoroughly discuss safe drilling procedures during the pre-activities training session. Site personnel will sign the form in Figure 8-2 documenting that they received the training and understand the procedures.

### **6.2.2 Cuts**

A number of accidents have been reported in last few years when field personnel accidentally cut themselves while extracting soil samples from acetate sample tubes. The tubes are normally inserted in

the Macro Core® Samplers or the dual tube samplers. Removing the soil sample requires cutting the tube and spooning the sample into a sample jar.

However, this activity has resulted in numerous cuts to the hands and legs. These injuries have occurred when field personnel open plastic liners improperly. To minimize this hazard, it is recommended that a liner cutter kit of some type be used. The Geoprobe® Corporation markets a liner cutter kit that can be used. This liner cutter makes two simultaneous longitudinal cuts 1-3/8 in. wide the entire length of Macro Core® liners. The kit includes cutting tool, cutter holder, and hooked stationary blades. The liner cutter holder is 48-in. long and slips onto a flat surface. Also has center mount for securing in a vise. In addition, the following safe work practices will assist in the minimization of this hazard. These items have been engineered to allow sample acquisition without placing the sampler at risk.

- Always cut away from yourself and others, then, if a knife slips, you will not impale yourself or others.
- Do not place items to be cut in your hand or on your knee.
- Change out blades as necessary to maintain a sharp cutting edge. Many accidents result from struggling with dull cutting attachments.

### **6.2.3 Contact with Underground or Overhead Utilities**

Underground utilities such as pressurized lines, water lines, telephone lines, buried utility lines, and high voltage power lines may be present throughout the facility. Therefore, subsurface activities must be conducted following the requirements of the Tetra Tech NUS SOP for "Utility Locating and Excavation Clearance (HS-1.0)". A copy of this SOP is provided as Attachment II. Clearance of underground and overhead utilities for each sample location will be coordinated with NAS Cecil Field personnel. Jan Bouvier is the point-of-contact for NA Mayport and can be reached at (904) 270-6730. Additionally, drilling operations will be conducted at a safe distance from overhead power lines as discussed in Attachment II. In certain cases, NA Mayport personnel may need to de-energize electrical cables using facility lockout/tagout procedures to insure electrical hazards are eliminated.

## **6.3 NATURAL HAZARDS**

Insect/animal bites and stings, inclement weather and other natural hazards must be considered given the location of activities to be conducted. In general, avoidance of areas of known infestation or nesting will be the preferred exposure control. Use of additional PPE with joints (ankles and wrists) taped, such as long pants tucked into boots or coveralls, is also recommended. Specific discussion on principle hazards of concern follows:

### **6.3.1 Insect/Animal Bites and Stings**

Various insects and animals may be present on site and should be considered when performing any of the work tasks described in this HASP.

#### **Fire Ants**

Fire ants present a unique situation when working outdoors in Florida. Their aggressive behavior and their ability to sting repeatedly can pose a unique health threat. The sting injects venom (formic acid) that causes an extreme burning sensation. Pustules form which can become infected if scratched. Allergic reactions of people sensitive to the venom include dizziness, swelling, shock and in extreme cases unconsciousness and death. People exhibiting such symptoms should see a physician. Fire ants can be identified by their habitat. They build mounds in open sunny areas sometimes supported by a wall or shrub. The mound has no external opening. The size of the mound can range from a few inches across to some which are in excess of two feet or more in height and diameter. When disturbed they defend it by swarming out and over the mound, even running up grass blades and sticks.

Also, areas to be investigated could be prime nesting and/or hiding locations for snakes and other insects. Personnel should avoid reaching into areas that are not visibly clear of snakes or insects. Snake chaps will be worn in areas of known or anticipated snake infestation. Site personnel who are allergic to stinging insects such as bees, wasps, and hornets must be particularly careful since severe illness and death may result from allergic reactions. As with any medical condition or allergy, information regarding the condition must be listed on the Medical Data Sheet and the FOL and SSO notified.

#### **Alligators**

Alligators live in all Florida counties but are most common in the major river drainage basins and large lakes in the central and southern portions of the state. They also can be found in marshes, swamps, ponds, drainage canals, phosphate-mine settling ponds, and ditches. Alligators are tolerant of poor water-quality and occasionally inhabit brackish marshes along the coast. A few even venture into salt water.

Mature alligators seek open water areas during the May-to-May courtship and breeding season. After mating, the females move into marsh areas to nest in June and early July where they remain until the following spring. Males generally prefer open and deeper water year-round. Alligators less than 4 feet long typically inhabit the marshy areas of lakes and rivers. Dense vegetation in these habitats provides protective cover and many of the preferred foods of young alligators.

- Most human attacks associated with alligators occur when humans have fed them or when defending their nests.
- Under no circumstances should you approach an alligator closely. They are quite agile, even on land. As with any wild animal, alligators merit a measure of respect.
- Alligators are classified as a threatened species and thus enjoy the protection of state and federal law. Only representatives of the Florida Game and Fresh Water Fish Commission are empowered to handle nuisance alligators.
- It is illegal to feed, tease, harass, molest, capture or kill alligators.
- If a serious problem does exist, contact the Florida Game and Fresh Water Fish Commission.

## **Ticks**

There are various areas throughout the U.S. where Lyme Disease is endemic. Fortunately, Florida is not one of these areas. Nonetheless, personnel should be aware of the hazards of tick bites and Lyme Disease. The longer a disease carrying tick remains attached to the body, the greater the potential for contracting the disease. Wearing long sleeved shirts and long pants (tucked into boots). As well as performing frequent body checks will prevent long term attachment. Site first aid kits should be equipped with medical forceps and rubbing alcohol to assist in tick removal. For information regarding tick removal procedures, and symptoms of exposure consult Section 4.0 of the Health and Safety Guidance Manual.

### **6.3.2 Inclement Weather**

Project tasks under this Scope of Work will be performed outdoors and near water. As a result, inclement weather may be encountered. In the event that adverse weather conditions arise (electrical storms, hurricanes, etc.), the FOL and/or the SSO will be responsible for temporarily suspending or terminating activities until hazardous conditions no longer exist.

## **Tropical Storms and Hurricanes**

As Florida is a tropical storm, hurricane prone area, the following information is supplied to explain the potential severity of these natural hazards. The decision to curtail operations and evacuate the area should be made by the FOL, PM, and the HSM.

During the early summer to late fall months, typically from the first of June through the end of November, disturbances migrating off the West Coast of Africa move into the Atlantic Ocean and develop into tropical cyclones known as tropical storms and hurricanes. Many of these cyclones become strong enough to threaten life and property along the Eastern Seaboard and Gulf Coast. There are three main threats associated with tropical storms and hurricanes:

- High winds
- Excessive rainfall
- Storm surge

The impacts of high winds and excessive rainfall occur hours, maybe days, before the tropical storm or hurricane makes landfall. However, the storm surge accompanies the storm or hurricane at the time that landfall occurs.

### High Winds

Sustained winds vary greatly from storm to storm, but can range from 39 to 73 miles per hour (wind speeds associated with a tropical storm) to greater than 74 miles per hour (minimal wind speed for a Category 1 hurricane). Table 6-2 compares the type of storm or hurricane and the corresponding wind speed.

**Table 6-2**  
**Tropical Storm/Hurricane Rating Scale**

TYPE	CATEGORY*	WINDS (MPH)
Tropical Depression	NA	>35-38
Tropical Storm	NA	39 – 73
Hurricane	1	74 – 95
Hurricane	2	96 – 110
Hurricane	3	111 – 130
Hurricane	4	131 – 155
Hurricane	5	>155

Based on the Saffir-Simpson scale

NA – Not Applicable

In addition to strong winds, there is the threat of debris (i.e. building material, trees, etc.) becoming airborne projectiles as they are carried by the high winds. Thunderstorms and tornadoes embedded within the tropical storm or hurricane can further increase the wind speeds on a localized level.

## Excessive Rainfall

Heavy rains associated with tropical storms and hurricanes also vary greatly from storm to storm. On average, an inch of rainfall an hour is not uncommon with major hurricanes, somewhat lesser amounts with tropical storms. However, the primary threat is not the intensity of rain, but the duration of rainfall. Since many tropical storms and hurricanes are slow-movers, they are capable of producing sustained heavy rainfall over a long period of time. It is not uncommon for an area to receive nearly 20 inches of rain in 24 hours. Under these conditions, street; stream and creek flooding is inevitable only to be exacerbated by locally heavier rains from thunderstorms.

## Storm Surge

The storm surge is an abnormal rise in sea level accompanying a hurricane or tropical storm. The height of the storm surge (usually measured in feet) is the difference in sea level from the observed level (during the storm) and the level that would have occurred in the absence of the storm or hurricane. The more intense the storm or hurricane the higher the storm surge. Storm surges become even higher if they occur during periods of high tide. Table 6-3 defines some of the terminology and possible calls to action regarding tropical cyclones:

**Table 6-3**  
**TROPICAL STORM/HURRICANE**  
**WATCH AND WARNING**

<b>STORM DESCRIPTION</b>	<b>DEFINITION</b>	<b>CALL TO ACTION</b>
Tropical Storm Watch	Tropical storm conditions are possible in the specified area of the watch, usually within 36 hours	Weather conditions should be monitored for further advisories.  Prepare for possible evacuation by local officials
Tropical Storm Warning	Tropical storm conditions are expected in the specified area of the warning, usually within 24 hours.	Work should be suspended in areas where lightning, high winds and rainfall could pose a threat to life.  Mandatory evacuations may be enforced by local officials.
Hurricane Watch	Hurricane conditions are possible in the specified area of the watch, usually within 36 hours.	Weather conditions should be monitored for further advisories.  Prepare for possible evacuation by local officials
Hurricane Warning	Hurricane conditions are expected in the specified area of the warning, usually within 24 hours.	Mandatory evacuations will most likely be enforced by local officials.

A NOAA Weather Radio is the best means to receive watches and warnings from the National Weather Service. The National Weather Service continuously broadcasts updated hurricane advisories that can be received by widely available NOAA Weather Radios.

### **6.3.3 Heat Stress**

Given the geographic location of the site and the project schedule, overexposure to high ambient temperatures (heat stress) may exist during performance of this work depending on the project schedule. (extremely cold temperatures are not expected to be encountered due to project location). Work performed when ambient temperatures exceed 70 °F may result in varying levels of heat stress (heat rash, heat cramps, heat exhaustion, and/or heat stroke) depending on variables such as wind speed, humidity, and percent sunshine, as well as physiological factors such as metabolic rate and skin moisture content. Additionally, workload and level of protective equipment will affect the degree of exposure. Site personnel will be encouraged to drink plenty of fluids to replace those lost through perspiration. Additional information such as Work-Rest Regimens and personnel monitoring may be found in Section 4.0 of the Health & Safety Guidance Manual.

Many of these physical hazards are discussed in detail in Section 4.0 of the Health and Safety Guidance Manual. Additional information regarding physical hazards associated with the site is provided in Table 5-1 of this HASP.

## **7.0 AIR MONITORING**

Direct reading instruments will be used at the site to detect and evaluate the presence of site contaminants and other potentially hazardous conditions. As a result, specific air monitoring measures and requirements are established in Table 5-1 pertaining to the specific hazards and tasks of an identified operation. Additionally, the Health and Safety Guidance Manual, Section 1.0, contains detailed information regarding direct reading instrumentation, as well as general calibration procedures of various instruments.

### **7.1 INSTRUMENTS AND USE**

Instruments will be used primarily to monitor source points and worker breathing zone areas, while observing instrument action levels. Action levels are discussed in Table 5-1 as they may apply to a specific task or location.

#### **7.1.1 Photoionization Detector or Flame Ionization Detector**

In order to accurately monitor for any substances, which may present an exposure potential to site personnel, a Photoionization Detector (PID) using a lamp energy of 10.6 eV or higher will be used. This instrument will be used to monitor potential source areas and to screen the breathing zones of employees during site activities. The PID has been selected because it is capable of detecting the organic vapors of concern [NOTE: A Flame Ionization Detector (FID) may be used as an alternative to the PID].

Prior to the commencement of any field activities, the background levels of the site must be determined and noted. Daily background readings will be taken away from any areas of potential contamination. These readings, any influencing conditions (i.e., weather, temperature, and humidity) and site location must be documented in the field operations logbook or other site documentation (e.g., sample log sheet).

#### **7.1.2 Hazard Monitoring Frequency**

Table 5-1 presents the frequencies that hazard monitoring will be performed as well as the action levels which will initiate the use of elevated levels of protection. The SSO may decide to increase these frequencies based on instrument responses and site observations. The frequency at which monitoring is performed will not be reduced without the prior consent of the PHSO or HSM.



## **7.2 INSTRUMENT MAINTENANCE AND CALIBRATION**

Hazard monitoring instruments will be maintained and pre-field calibrated by the TtNUS Equipment Manager. Operational checks and field calibration will be performed on instruments each day prior to their use. Field calibration will be performed on instruments according to manufacturer's recommendations (for example, the PID must be field calibrated daily and an additional field calibration must be performed at the end of each day to determine any significant instrument drift). These operational checks and calibration efforts will be performed in a manner that complies with the employees health and safety training, the manufacturer's recommendations, and with the applicable manufacturer standard operating procedure (copies of which can be found in the Health and Safety Guidance Manual which will be maintained on site for reference). Calibration efforts must be documented. Figure 7-1 is provided for documenting these calibration efforts. This information may instead be recorded in a field operations logbook, provided that the information specified in Figure 7-1 is recorded. This required information includes the following:

- Date calibration was performed
- Individual calibrating the instrument
- Instrument name, model, and serial number
- Any relevant instrument settings and resultant readings (before and after) calibration
- Identification of the calibration standard (lot number, source concentration, and supplier)
- Any relevant comments or remarks

### FIGURE 7-1

## DOCUMENTATION OF FIELD CALIBRATION

**SITE NAME:** \_\_\_\_\_

**PROJECT NO.:**

[illegible]

## **8.0 TRAINING/MEDICAL SURVEILLANCE REQUIREMENTS**

### **8.1 INTRODUCTORY/REFRESHER/SUPERVISORY TRAINING**

This section is included to specify health and safety training and medical surveillance requirements for both TtNUS and subcontractor personnel participating in site activities.

#### **8.1.1 Requirements for TtNUS Personnel**

TtNUS personnel must complete 40 hours of introductory hazardous waste site training prior to performing work at the NS Mayport facility. Additionally, TtNUS personnel who have had introductory training more than 12 months prior to site work must have completed 8 hours of refresher training in the past 12 months before being cleared for site work. In addition, 8-hour supervisory training in accordance with 29 CFR 1910.120 (e)(4) will be required for site supervisory personnel.

Documentation of TtNUS introductory, supervisory, and refresher training as well as site-specific training will be maintained at the project. Copies of certificates or other official documentation will be used to fulfill this requirement.

#### **8.1.2 Requirements for Subcontractors**

TtNUS subcontractor personnel must have completed introductory hazardous waste site training or equivalent work experience as defined in OSHA Standard 29 CFR 1910.120 (e). Additionally, personnel who have had the introductory training more than 12 months ago, are required to have 8 hours of refresher training meeting the requirements of 29 CFR 1910.120 (e)(8) prior to performing field work at the NS Mayport facility, if required. TtNUS subcontractors must certify that each employee has had such training by sending TtNUS a letter, on company letterhead, containing the information in the example letter provided as in Figure 8-1 and by providing copies of certificates for subcontractor personnel participating in site activities.

**FIGURE 8-1  
TRAINING LETTER**

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by copies of personnel training certificates:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Mark Peterson  
Tetra Tech NUS, Inc.  
Task Order Manager  
7018 AC Skinner Parkway  
Suite 250  
Jacksonville, Florida 32256

Subject: HAZWOPER Training for NS Mayport, Florida

Dear Mr. Peterson:

As an officer of XYZ Corporation, I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with applicable occupational safety and health regulations, including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through 1910 and Part 1926.

I also understand that Title 29 CFR 1910.120, entitled "Hazardous Waste Operations and Emergency Response," requires appropriate level of training for certain employees engaged in hazardous waste operations. In this regard, I hereby state that the following employees have had 40 hours of introductory hazardous waste site training or equivalent work experience as requested by 29 CFR 1910.120(e) and have had 8 hour of refresher training as applicable and as required by 29 CFR 1910.120(e)(8) and that site supervisory personnel have had training in accordance with 29 CFR 1910.120(e)(4).

LIST FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555

Sincerely,

(Name and Title of Company Officer)

Enclosed: Training Certificates

## **8.2 SITE-SPECIFIC TRAINING**

TtNUS will provide site-specific training to TtNUS employees and subcontractor personnel who will perform work on this project. Site-specific training will also be provided to personnel (U.S. Department of Defense, EPA, etc.) who may enter the site to perform functions that may or may not be directly related to site operations. Site-Specific training will include:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Incipient response procedures
- Review of the contents of relevant Material Safety Data Sheets

Site-specific documentation will be established through the use of Figure 8-2. Site personnel and visitors must sign this document upon receiving site-specific training.

## **8.3 MEDICAL SURVEILLANCE**

### **8.3.1 Medical Surveillance Requirements for TtNUS Personnel**

TtNUS personnel participating in project field activities will have had a physical examination meeting the requirements of TtNUS's medical surveillance program and will be medically qualified to perform hazardous waste site work using respiratory protection.

Documentation for medical clearances will be maintained in the TtNUS Pittsburgh office and made available, as necessary.

**FIGURE 8-2**  
**SITE-SPECIFIC TRAINING DOCUMENTATION**

My signature below indicates that I am aware of the potential hazardous nature of performing remedial investigation activities at NS Mayport, Florida and that I have received site-specific training, which included the elements presented below:

- Names of designated personnel and alternates responsible for site safety and health
- Safety, health, and other hazards present on site
- Use of personal protective equipment
- Safe use of engineering controls and equipment
- Medical surveillance requirements
- Signs and symptoms of overexposure
- Contents of the Health and Safety Plan
- Emergency response procedures (evacuation and assembly points)
- Incident response procedures
- Review of the contents of relevant Material Safety Data Sheets
- Review Safe Work Permits

My signature below indicates that I have been given the opportunity to ask questions and that my questions have been answered to my satisfaction, and that the dates of my training and medical surveillance indicated below are accurate.

[illegible]

### **8.3.2 Medical Surveillance Requirements for Subcontractors**

Subcontractors are required to obtain a certificate of their ability to perform hazardous waste site work and to wear respiratory protection. The "Subcontractor Medical Approval Form" provided in Figure 8-3 will be used to satisfy this requirement, providing it is properly completed and signed by a licensed physician.

Subcontractors who have a company medical surveillance program meeting the requirements of paragraph (f) of OSHA 29 CFR 1910.120 can substitute "Subcontractor Medical Approval Form" (See Figure 8-3) with a letter, on company letterhead, containing the information in the example letter presented in Figure 8-4 of this HASP.

### **8.3.3 Requirements for Field Personnel**

Each field team member (including subcontractors) and visitors entering the Exclusion Zone(s) shall be required to complete and submit a copy of Medical Data Sheet found in the TtNUS Health and Safety Guidance Manual. This shall be provided to the SSO, prior to participating in site activities. The purpose of this document is to provide site personnel and emergency responders with additional information that may be necessary in order to administer medical attention.

## **8.4 SUBCONTRACTOR EXCEPTIONS**

Subcontractors who will not enter the Exclusion Zone during intrusive operations, and whose activities involve no potential for exposure to site contaminants, will not be required to meet the requirements for training/medical surveillance other than those stated for site-specific training (See Section 8.2).

**FIGURE 8-3**

**SUBCONTRACTOR MEDICAL APPROVAL FORM**

For employees of \_\_\_\_\_  
Company Name

Participant Name: \_\_\_\_\_ Date of Exam: \_\_\_\_\_

**Part A**

The above-named individual has:

1. Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -

- ☐ ( ) qualified to perform work at the NS Mayport work site
- ☐ ( ) not qualified to perform work at the NS Mayport work site

and,

2. Undergone a physical examination as per OSHA 29 CFR 1910.134(b)(10) and found to be medically -

- ☐ ( ) qualified to wear respiratory protection
- ☐ ( ) not qualified to wear respiratory protection

My evaluation has been based on the following information, as provided to me by the employer.

- ☐ ( ) A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- ☐ ( ) A description of the employee's duties as they relate to the employee's exposures.
- ☐ ( ) A list of known/suspected contaminants and their concentrations (if known).
- ☐ ( ) A description of any personal protective equipment used or to be used.
- ☐ ( ) Information from previous medical examinations of the employee which is not readily available to the examining physician.

**Part B**

I, \_\_\_\_\_, have examined \_\_\_\_\_  
Physician's Name (print) Participant's Name (print)  
and have determined the following information:



**FIGURE 8-3**  
**SUBCONTRACTOR MEDICAL APPROVAL FORM**  
**PAGE TWO**

1. Results of the medical examination and tests (excluding finding or diagnoses unrelated to occupational exposure):

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2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

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3. Recommended limitations upon the employee's assigned work:

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---

---

I have informed this participant of the results of this medical examination and any medical conditions, which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the NS Mayport work site, this participant

- ( ) may  
( ) may not

perform his/her assigned task.

Physician's Signature \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

NOTE: Copies of test results are maintained and available at:

\_\_\_\_\_  
Address

**FIGURE 8-4**  
**MEDICAL SURVEILLANCE LETTER**

The following statements must be typed on company letterhead and signed by an officer of the company:

LOGO  
XYZ CORPORATION  
555 E. 5th Street  
Nowheresville, Kansas 55555

Month, day, year

Mr. Mark Peterson  
Tetra Tech NUS, Inc.  
Task Order Manager  
7018 AC Skinner Parkway  
Suite 250  
Jacksonville, Florida 32256

Subject: HAZWOPER Training for NS Mayport, Florida

Dear Mr. Peterson:

As an officer of XYZ Corporation, I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements contained in paragraph (f) of Title 29 of the Code of Federal Regulations (CFR) Part 1910.120, entitled "Hazardous Waste Operations and Emergency Response. I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a license physician, to perform hazardous waste site work and to wear positive- and negative-pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the NS Mayport facility.

LIST OF FULL NAMES OF EMPLOYEES AND THEIR SOCIAL SECURITY NUMBERS HERE.

Should you have any questions, please contact me at (555) 555-5555

Sincerely,

(Name and Title of Company Officer)

## **9.0 SPILL CONTAINMENT PROGRAM**

### **9.1 SCOPE AND APPLICATION**

It is anticipated that quantities of bulk potentially hazardous materials (greater than 55-gallons) will not be handled during the site activities. It is possible, however, that as the job progresses disposable PPE and other non-reusable items may be generated. As needed, 55-gallon drums will be used to contain unwanted items generated during sampling activities. The drum(s) will be labeled with the site name and address, the type of contents, and the date the container was filled as well as an identified contact person. As warranted, samples will be collected and analyzed to characterize the material and determine appropriate disposal measures. Once characterized the drum(s) will be removed from the staging area and disposed of in accordance with Federal, State and local regulations. Given the likely solid nature of drum contents, a comprehensive Spill Containment Program is not necessary. The following discussion is provided as contingency information only.

### **9.2 POTENTIAL SPILL AREAS**

Should drums contain liquid wastes, potential spill areas will be monitored in an ongoing attempt to prevent and control further potential contamination of the environment. Areas designated for handling, loading, and unloading of potentially contaminated waters and debris present limited potential for leaks or spills.

#### **9.2.1 Site Drums/Containers**

Drums/containers used for containing liquids will be sealed, labeled, and staged within a centralized area awaiting shipment or disposal.

### **9.3 LEAK AND SPILL DETECTION**

To establish an early detection of potential spills or leaks, periodic inspections by the SSO will be conducted during working hours to visually determine that containers are not leaking. If a leak is detected, the first approach will be to transfer the container contents using a hand pump into a new container. Other provisions for the transfer of container contents will be made and appropriate emergency contacts will be notified, if necessary. In most instances, leaks will be collected and contained using absorbents such as Oil-dry, vermiculite, and/or sand, which may be stored at the staging

area in a conspicuously marked drum. This material too, will be containerized for disposal pending analyses. Inspections will be documented in the Project Logbook.

#### **9.4 PERSONNEL TRAINING AND SPILL PREVENTION**

Personnel will be instructed on the procedures for spill prevention, containment, and collection of hazardous materials in the site-specific training. The FOL and/or the SSO will serve as the Spill Response Coordinator for this operation should the need arise.

#### **9.5 SPILL PREVENTION AND CONTAINMENT EQUIPMENT**

The following represents the types of equipment that may be maintained at the staging area for the purpose of supporting this Spill Containment Program (depending on the likelihood that drums and/or liquid wastes are generated).

- Sand, clean fill, vermiculite, or other noncombustible absorbent (oil-dry);
- Drums (55-gallon U.S. DOT 17-E or 17-H)
- Shovels, rakes, and brooms
- Labels

#### **9.6 SPILL CONTROL PLAN**

This section describes the procedures the TtNUS field crewmembers will employ upon the detection of a spill or leak.

- 1) Notify the SSO or FOL immediately.
- 2) Take immediate actions to stop the leak or spill by plugging or patching the drum or raising the leak to the highest point. Avoid contacting drum contents. Spread the absorbent material in the area of the spill covering completely.

It is not anticipated that a spill will occur in which the field crews cannot handle. Should this occur; however, the FOL or SSO will notify appropriate emergency response agencies.

## **10.0 SITE CONTROL**

This section outlines the means by which TtNUS will delineate work zones and use these work zones in conjunction with decontamination procedures to prevent the spread of contaminants into previously unaffected areas of the site. It is recognized that, given the planned scope of work, the application of a three-zone approach is considered conservative. Nonetheless, this approach will be used and includes an Exclusion Zone, a Contamination Reduction Zone, and a Support Zone. It is also anticipated that this control measure will be used to control access to site work areas. Use of such controls will restrict the general public, minimize the potential for the spread of contaminants, and protect individuals who are not cleared to enter work areas.

### **10.1 EXCLUSION ZONE**

The Exclusion Zone will be considered those areas of active operations plus an established safety zone depending on the task. The following represent the Exclusion Zone boundaries for the following identified tasks:

- Monitoring Well Installation – The boundary perimeter will be established by determining the height of the mast, plus five feet. Therefore, if it is a 35-foot mast plus 5 feet equals a 40-foot boundary surrounding the point of operation.
- Well Development and AFUR activities– 10 feet surrounding the well head and discharge point.
- Groundwater sampling – 10 feet surrounding the well head.
- Subsurface soils – 5 feet surrounding the sample collection point.
- Decontamination (heavy equipment – steam/pressure washers) – 35 feet surrounding the point of operation. This will take place at a centralized location.

Where appropriate and necessary to direct facility personnel, this area will be delineated using barrier tape, cones and/or drive poles, and postings.

## **10.2 CONTAMINATION REDUCTION ZONE**

The Contamination Reduction Zone (CRZ) will be a buffer area between the Exclusion Zone and any area of the site where contamination is not suspected. The personnel and sampling equipment decontamination will take place in this area. This area will also serve as a focal point in supporting Exclusion Zone activities.

## **10.3 SUPPORT ZONE**

The Support Zone for this project will include a staging area where site vehicles will be parked, equipment will be unloaded, and where food and drink containers will be maintained. The Support Zone will be established at areas of the site where exposure to site contaminants would not be expected during normal working conditions or foreseeable emergencies.

## **10.4 SITE VISITORS**

Site visitors for the purpose of this document are identified as representing the following groups of individuals:

- Personnel invited to observe or participate in operations by TtNUS
- Regulatory personnel (EPA, OSHA, etc.)
- NS Mayport personnel
- Other authorized visitors

Personnel working on this project are required to gain initial access to the site by coordinating with the TtNUS FOL or designee and following established site access procedures.

Upon gaining access to the site, site visitors wishing to observe operations in progress will be escorted by a TtNUS representative (arranged for by the FOL) and shall be required to meet the minimum requirements discussed below:

- Site visitors will be routed to the FOL, who will sign them into the field logbook. Information to be recorded in the logbook will include the individual's name (proper identification required), the entity which they represent, and the purpose of the visit.

- Site visitors will be required to produce the necessary information supporting clearance to the site. This shall include information attesting to applicable training (40-hours of HAZWOPER training) and medical surveillance as stipulated in Section 8.0 of this document. In addition, to enter the site operational zones during planned activities, visitors will be required to first go through site-specific training covering the topics stipulated in Section 8.2 of this HASP.

Once the site visitors have completed the above items, they will be permitted to enter the operational zone. Visitors are required to observe the protective equipment and site restrictions in effect at the site at the time of their visit. Visitors not meeting the requirements stipulated in this plan will not be permitted to enter the site operational zones during planned activities. Any incidence of unauthorized site visitation will cause the termination of onsite activities until the unauthorized visitor is removed from the premises. Removal of unauthorized visitors will be accomplished with support from the FOL, SSO or on-site security personnel.

#### **10.5 SITE SECURITY**

Site security will be accomplished using existing base security resources and procedures, supplemented by TtNUS personnel, if necessary. TtNUS will retain control over active operational areas. The first line of security will take place at the base boundaries restricting the general public. The second line of security will take place at the work site referring interested parties to the FOL. The FOL will serve as a focal point for site personnel, and will serve as the final line of security and the primary enforcement contact.

#### **10.6 SITE MAPS**

Once the areas of contamination, access routes, utilities, topography, and dispersion routes are determined, a site map will be generated and adjusted as site conditions change. These maps will show potential points of contact with the public, roadways, and other significant characteristics that may impact site operations and safety. Site maps will be posted to illustrate up-to-date collection of contaminants and adjustment of zones and access points.

#### **10.7 BUDDY SYSTEM**

Personnel engaged in onsite activities will practice the "buddy system" to ensure the safety during this operation.

## **10.8 MATERIAL SAFETY DATA SHEET (MSDS) REQUIREMENTS**

TtNUS personnel will provide MSDSs for the chemicals brought on site. The contents of these documents will be reviewed by the SSO with the user(s) of the chemical substances prior to any actual use or application of the substances on site. A chemical inventory of the chemicals used on site will be developed using Section 5.0 of the Health and Safety Guidance Manual. The MSDSs will then be maintained in a central location and will be available for anyone to review upon request.

## **10.9 COMMUNICATION**

TtNUS personnel will be working in close proximity to each other at NS Mayport. As a result and since two way radio communication will not be available, hand signals, voice commands, and line of site will provide sufficient means of communication. When project tasks are performed simultaneously on different sites, vehicle horns will be used to communicate emergency situations per Section 2.8 of this HASP.

External communication will be accomplished by using provided telephones at the site. External communication will primarily be used for the purpose of resource and emergency resource communications.

## **10.10 SAFE WORK PERMITS**

Exclusion Zone work conducted in support of this project will be performed using Safe Work Permits to guide and direct field crews on a task by task basis. An example of the Safe Work Permit to be used is illustrated in Figure 10-1. Partially completed Permits for Exclusion Zone tasks are included as Attachment III of this HASP. These work permits will be further supported by the daily meetings conducted during their generation. This effort will ensure that site-specific considerations and changing conditions are incorporated into the planning effort.

Use of these permits will provide the communication line for reviewing protective measures and hazards associated with each operation. This HASP will be used as the primary reference for selecting levels of protection and control measures. The work permit will take precedence over the HASP when more conservative measures are required based on specific site conditions.

The FOL and/or the SSO will be responsible for completing the safe work permit and issuing them to the appropriate parties. Site personnel at the end of each day's activity will turn in the permit(s) used for that day to the SSO. Permits will be maintained as part of the permanent project files attesting to safety and



health measures employed for a given task at a given time and place. Any problems encountered with the protective measures required should be documented on the permit and brought to the attention of the SSO.

# **FIGURE 10-1** **SAFE WORK PERMIT**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope** (To be filled in by person performing work)

- I. Work limited to the following (description, area, equipment used): \_\_\_\_\_  
\_\_\_\_\_
- II. Names: \_\_\_\_\_
- III. Onsite Inspection conducted ☐ Yes ☐ No Initials of Inspector \_\_\_\_\_  
TtNUS

**SECTION II: General Safety Requirements** (To be filled in by permit issuer)

- IV. Protective equipment required Respiratory equipment required
- |                                  |                                  |                                        |                                         |
|----------------------------------|----------------------------------|----------------------------------------|-----------------------------------------|
| Level D <input type="checkbox"/> | Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/>    |
| Level C <input type="checkbox"/> | Level A <input type="checkbox"/> | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/>           |
| Detailed on Reverse              |                                  | SKA-PAC SAR <input type="checkbox"/>   | Bottle Trailer <input type="checkbox"/> |
|                                  |                                  | Skid Rig <input type="checkbox"/>      | None <input type="checkbox"/>           |

Modifications/Exceptions: \_\_\_\_\_  
\_\_\_\_\_

V. Chemicals of Concern	Action Level(s)	Response Measures
-------------------------	-----------------	-------------------

_____	_____	_____
-------	-------	-------

VI. Additional Safety Equipment/Procedures

- |                                                                                       |                                                                                                |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Hardhat..... <input type="checkbox"/> Yes <input type="checkbox"/> No                 | Hearing Protection (Plugs/Muffs)..... <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses..... <input type="checkbox"/> Yes <input type="checkbox"/> No          | Safety belt/harness..... <input type="checkbox"/> Yes <input type="checkbox"/> No              |
| Chemical/splash goggles..... <input type="checkbox"/> Yes <input type="checkbox"/> No | Radio..... <input type="checkbox"/> Yes <input type="checkbox"/> No                            |
| Splash Shield..... <input type="checkbox"/> Yes <input type="checkbox"/> No           | Barricades..... <input type="checkbox"/> Yes <input type="checkbox"/> No                       |
| Splash suits/coveralls..... <input type="checkbox"/> Yes <input type="checkbox"/> No  | Gloves (Type)..... <input type="checkbox"/> Yes <input type="checkbox"/> No                    |
| Steel toe work boots..... <input type="checkbox"/> Yes <input type="checkbox"/> No    | Work/rest regimen..... <input type="checkbox"/> Yes <input type="checkbox"/> No                |

Modifications/Exceptions: \_\_\_\_\_

- |                                             |                          |                          |                        |                          |                          |
|---------------------------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|
| VII. Procedure review with permit acceptors | Yes                      | NA                       | Emergency alarms.....  | Yes                      | NA                       |
| Safety shower/eyewash (Location & Use)..... | <input type="checkbox"/> | <input type="checkbox"/> | Evacuation routes..... | <input type="checkbox"/> | <input type="checkbox"/> |
| Procedure for safe job completion.....      | <input type="checkbox"/> | <input type="checkbox"/> | Assembly points.....   | <input type="checkbox"/> | <input type="checkbox"/> |
| Contractor tools/equipment inspected.....   | <input type="checkbox"/> | <input type="checkbox"/> |                        |                          |                          |

- |                                                              |                          |                          |                          |
|--------------------------------------------------------------|--------------------------|--------------------------|--------------------------|
| IX. Site Preparation                                         | Yes                      | No                       | NA                       |
| Utility Locating and Excavation Clearance completed.....     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated.....                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged.....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... ☐ Yes ☐ No  
*If yes, fill out appropriate section(s) on safety work permit addendum*

- X. Special instructions, precautions: \_\_\_\_\_  
\_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

Job Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

## 11.0 CONFINED SPACE ENTRY

It is not anticipated, under the proposed scope of work, that confined space and permit-required confined space activities will be conducted. **Therefore, personnel under the provisions of this HASP are not allowed, under any circumstances, to enter confined spaces.** A confined space is defined as an area which has one or more of the following characteristics:

- Is large enough and so configured that an employee can bodily enter and perform assigned work.
- Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
- Is not designed for continuous employee occupancy.

A Permit-Required Confined Space is one that:

- Contains or has a potential to contain a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.
- Contains any other recognized, serious, safety or health hazard.

For further information on confined space, consult the Health and Safety Guidance Manual or call the PHSO. If confined space operations are to be performed as part of the scope of work, detailed procedures and training requirements will have to be addressed.

## 12.0 MATERIALS AND DOCUMENTATION

The TtNUS FOL shall ensure the following materials/documents are taken to the project site and used when required.

- A complete copy of this HASP
- Health and Safety Guidance Manual
- Incident Reports
- Medical Data Sheets
- Material Safety Data Sheets for the chemicals brought on site, including decon solutions, fuels, lime, sample preservatives, calibration gases, etc.
- A full-size OSHA Job Safety and Health Poster (posted in the site trailers)
- Training/Medical Surveillance Documentation Form (Blank)
- Emergency Reference Information (Section 2.0, extra copy for posting)

### 12.1 MATERIALS TO BE POSTED OR MAINTAINED AT THE SITE

The following documentation is to be posted or maintained at the site for quick reference purposes. In situations where posting these documents is not feasible, (such as no office trailer), these documents should be separated and immediately accessible.

**Chemical Inventory Listing (posted)** - This list represents the chemicals brought on-site, including decontamination solutions, sample preservations, fuel, etc.. This list should be posted in a central area.

**Material Safety Data Sheets (MSDS) (maintained)** - The MSDSs should also be in a central area accessible to site personnel. These documents should match the listings on the chemical inventory list for the substances used on-site. It is acceptable to have these documents within a central folder and the chemical inventory as the table of contents.

**The OSHA Job Safety & Health Protection Poster (posted)** - this poster, as directed by 29 CFR 1903.2 (a)(1), should be conspicuously posted in places where notices to employees are normally posted. Each FOL shall ensure that this poster is not defaced, altered, or covered by other material. When preparing to print from a personal computer, first check and make sure that the target printer has the ability to produce the proper paper size (the minimum size is 8.5 x 14 inches).

**Site Clearance (maintained)** - This list is found within the training section of the HASP (See Figure 8-2). This list identifies site personnel, dates of training (including site-specific training), and medical surveillance. The list indicates not only clearance but also status. If personnel do not meet these requirements, they do not enter the site while site personnel are engaged in activities.

**Emergency Phone Numbers and Directions to the Hospital(s) (posted)** - This list of numbers and directions will be maintained at phone communications points and in each site vehicle.

**Medical Data Sheets/Cards (maintained)** - Medical Data Sheets will be filled out by on-site personnel and filed in a central location. The Medical Data Sheet will accompany any injury or illness requiring medical attention to the medical facility. A copy of this sheet or a wallet card will be given to personnel to be carried on their person.

**Hearing Conservation Standard (29 CFR 1910.95) (posted)** - this standard will be posted anytime hearing protection or other noise abatement procedures are employed.

**Personnel Monitoring (maintained)** - Results generated through personnel sampling (levels of airborne toxins, noise levels, etc.) will be posted to inform individuals of the results of that effort.

**Placards and Labels (maintained)** - Where chemical inventories have been separated because of quantities and incompatibilities, these areas will be conspicuously marked using DOT placards and acceptable (Hazard Communication 29 CFR 1910.1200(f)) labels.

The purpose of maintaining or posting this information, as stated above, is to allow site personnel quick access. Variations concerning location and methods of presentation are acceptable, providing the objection is accomplished.

## 13.0 GLOSSARY

ACGIH	American Conference of Governmental Industrial Hygienists
APR	Air Purifying Respirators
CFR	Code of Federal Regulations
CNS	Central Nervous System
CRZ	Contamination Reduction Zone
DOD	Department of Defense
DOT	Department of Transportation
EPA	Environmental Protection Agency
eV	electron Volts
FID	Flame Ionization Detector
FOL	Field Operations Leader
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
LEL/O <sub>2</sub>	Lower Explosive Limit/Oxygen
N/A	Not Available
NIOSH	National Institute Occupational Safety and Health
NS	Naval Station
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PEL	Permissible Exposure Limit
PHSO	Project Health and Safety Officer
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PVC	Poly Vinyl Chloride
SAP	Sampling and Analysis Plan
SCBA	Self Contained Breathing Apparatus
SSO	Site Safety Officer
STEL	Short Term Exposure Limit
TOM	Task Order Manager
TWA	Time Weighted Average
UV	Ultraviolet
WP	Work Plan

**ATTACHMENT I**

**INJURY/ILLNESS PROCEDURE  
AND REPORT FORM**

## **TETRA TECHNUS, INC.**

### **INJURY/ILLNESS PROCEDURE WORKER'S COMPENSATION PROGRAM**

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#### **WHAT YOU SHOULD DO IF YOU ARE INJURED OR DEVELOP AN ILLNESS AS A RESULT OF YOUR EMPLOYMENT:**

- If injury is minor, obtain appropriate first aid treatment.
- If injury or illness is severe or life threatening, obtain professional medical treatment at the nearest hospital emergency room.
- If incident involves a chemical exposure on a project work site, follow instructions in the Health & Safety Plan.
- Immediately report any injury or illness to your supervisor or office manager. In addition, you must contact your Human Resources representative, Marilyn Diethorn at (412) 921-8475, and the Corporate Health and Safety Manager, Matt Soltis at (412) 921-8912 within 24 hours. You will be required to complete an Injury/Illness Report (attached). You may also be required to participate in a more detailed investigation from the Health Sciences Department.
- If further medical treatment is needed, The Hartford Network Referral Unit will furnish a list of network providers customized to the location of the injured employee. These providers are to be used for treatment of Worker's Compensation injuries subject to the laws of the state in which you work. Please call Marilyn Diethorn at (412) 921-8475 for the number of the Referral Unit.

#### **ADDITIONAL QUESTIONS REGARDING WORKER'S COMPENSATION:**

Contact your local human resources representative, corporate health and safety coordinator, or Corporate Administration in Pasadena, California, at (626) 351-4664.

Worker's compensation is a state-mandated program that provides medical and disability benefits to employees who become disabled due to job related injury or illness. Tetra Tech, Inc. and its subsidiaries (Tetra Tech or Company) pay premiums on behalf of their employees. The type of injuries or illnesses covered and the amount of benefits paid are regulated by the state worker's compensation boards and vary from state to state. Corporate Administration in Pasadena is responsible for administering the Company's worker's compensation program. The following is a general explanation of worker's compensation provided in the event that you become injured or develop an illness as a result of your employment with Tetra Tech or any of its subsidiaries. Please be aware that the term used for worker's compensation varies from state to state.

#### **WHO IS COVERED:**

Employees of Tetra Tech, whether they are on a full-time, part-time or temporary status, working in an office or in the field, are entitled to worker's compensation benefits. Employees must follow the above injury/illness reporting procedures. Consultants, independent



contractors, and employees of subcontractors are not covered by Tetra Tech's Worker's Compensation plan.

**WHAT IS COVERED:**

If you are injured or develop an illness caused by your employment, worker's compensation benefits are available to you subject to the laws of the state you work in. Injuries do not have to be serious; even injuries treated by first aid practices are covered and must be reported. Please note that if you are working out-of-state and away from your home office, you are still eligible for worker's compensation benefits.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT**

To: \_\_\_\_\_  
Subsidiary Health and Safety Representative

Prepared by: \_\_\_\_\_

cc: \_\_\_\_\_  
Workers Compensation Administrator

Position: \_\_\_\_\_

Project name: \_\_\_\_\_

Office: \_\_\_\_\_

Project number: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Fax number: \_\_\_\_\_

**Information Regarding Injured or Ill Employee**

Name: \_\_\_\_\_

Office: \_\_\_\_\_

Home address: \_\_\_\_\_

Gender: M ☐ F ☐ No. of dependents: \_\_\_\_\_

Home telephone number: \_\_\_\_\_

Marital status: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Date of birth: \_\_\_\_\_

Department: \_\_\_\_\_

Social security number: \_\_\_\_\_

Date of Accident: \_\_\_\_\_

Time of Accident: \_\_\_\_\_ a.m. ☐ p.m. ☐

Time Employee Began Work: \_\_\_\_\_

☐ Check if time cannot be determined

**Location of Incident**

Street address: \_\_\_\_\_

City, state, and zip code: \_\_\_\_\_

County: \_\_\_\_\_

Was place of accident or exposure on employer's premises? Yes ☐ No ☐

**Information About the Incident**

**What was the employee doing just before the incident occurred?** Describe the activity as well as the tools, equipment, or material the employee was using. Be specific. Examples: "Climbing a ladder while carrying roofing materials"; "Spraying chlorine from hand sprayer"; "Daily computer key-entry"

**What Happened?** Describe how the injury occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time"

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**Information About the Incident (Continued)**

**What was the injury or illness?** Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples "Strained back"; "Chemical burn, right hand"; "Carpal tunnel syndrome, left wrist"

**Describe the Object or Substance that Directly Harmed the Employee:** Examples: "Concrete floor"; "Chlorine"; "Radial arm saw." If this question does not apply to the incident, write "Not applicable."

Did the employee die? Yes ☐ No ☐ Date of death: \_\_\_\_\_

Was employee performing regular job duties? Yes ☐ No ☐

Was safety equipment provided? Yes ☐ No ☐ Was safety equipment used? Yes ☐ No ☐

**Note: Attach any police reports or related diagrams to this report.**

**Witness** (Attach additional sheets for other witnesses.)

Name: \_\_\_\_\_

Company: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

**Medical Treatment Required?** ☐ Yes ☐ No ☐ First aid only

Name of physician or health care professional: \_\_\_\_\_

If treatment was provided away from the work site, provide the information below.

Facility name: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Was the employee treated in an emergency room? ☐ Yes ☐ No

Was the employee hospitalized over night as an in-patient? ☐ Yes ☐ No

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**Corrective Action(s) Taken by Unit Reporting the Accident:**

**Corrective Action Still to be Taken (by whom and when):**

**Name of Tetra Tech employee the injury or illness was first reported to:** \_\_\_\_\_

**Date of Report:** \_\_\_\_\_ **Time of Report:** \_\_\_\_\_

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

\_\_\_\_\_  
Printed Name of Injured Employee

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
Signature of Injured Employee

\_\_\_\_\_  
Date

The signatures provided below indicate that appropriate personnel have been notified of the incident.

Title	Printed Name	Signature	Telephone Number	Date
Office Manager				
Project Manager				
Site Safety Coordinator or Office Health and Safety Representative				

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.



**TETRA TECH, INC.**

**ACCIDENT AND ILLNESS INVESTIGATION REPORT (Continued)**

**To Be Completed by the Subsidiary Health and Safety Representative**

**Classification of Incident:**

☐ Injury    ☐ Illness

**Result of Incident:**

- ☐ First aid only
- ☐ Days away from work
- ☐ Remained at work but incident resulted in job transfer or work restriction
- ☐ Incident involved days away and job transfer or work restriction
- ☐ Medical treatment only

No. of days away from work \_\_\_\_\_

Date employee left work \_\_\_\_\_

Date employee returned to work \_\_\_\_\_

No. of days placed on restriction or job transfer: \_\_\_\_\_

OSHA Recordable Case Number \_\_\_\_\_

**To Be Completed by Human Resources**

Social security number: \_\_\_\_\_

Date of hire: \_\_\_\_\_ Hire date for current job: \_\_\_\_\_

Wage information: \$ \_\_\_\_\_ per ☐ Hour ☐ Day ☐ Week ☐ Month

Position at time of hire: \_\_\_\_\_

Current position: \_\_\_\_\_ Shift hours: \_\_\_\_\_

State in which employee was hired: \_\_\_\_\_

Status: ☐ Full-time ☐ Part-time Hours per week: \_\_\_\_\_ Days per week: \_\_\_\_\_

Temporary job end date: \_\_\_\_\_

**To Be Completed during Report to Workers Compensation Carrier**

Date reported: \_\_\_\_\_ Reported by: \_\_\_\_\_

Confirmation number: \_\_\_\_\_

Name of contact: \_\_\_\_\_

Field office of claims adjuster: \_\_\_\_\_

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

**ATTACHMENT II**

**STANDARD OPERATING PROCEDURE  
FOR  
UTILITY LOCATING AND EXCAVATION  
CLEARANCE**



TETRA TECH NUS, INC.

# STANDARD OPERATING PROCEDURES

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Effective	03/00	Date	Revision
			1
Applicability	Tetra Tech NUS, Inc.		
Prepared	Health & Safety		
Approved	D. Senovich <i>ds</i>		

Subject  
UTILITY LOCATING AND EXCAVATION CLEARANCE

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## 1.0 PURPOSE

Utilities such as electric service lines, natural or propane gas lines, water and sewage lines, telecommunications, and steam lines are very often in the immediate vicinity of work locations. Contact with underground or overhead utilities can have serious consequences including employee injury/fatality, property and equipment damage, substantial financial impacts, and loss of utility service to users.

The purpose of this procedure is to provide minimum requirements and technical guidelines regarding the appropriate procedures to be followed when performing subsurface and overhead utility locating services. It is the policy of Tetra Tech NUS, Inc. (TtNUS) to provide a safe and healthful work environment for the protection of our employees. The purpose of this Standard Operating Procedure (SOP) is to aid in achieving the objectives of the TtNUS Utility Locating and Clearance Policy. The TtNUS Utility Locating and Clearance Policy must be reviewed by anyone potentially involved with underground or overhead utility services.

## 2.0 SCOPE

This procedure applies to all TtNUS field activities where there may be potential contact with underground or overhead utilities. This procedure provides a description of the principles of operation, instrumentation, applicability, and implementability of typical methods used to determine the presence or absence of utility services. This procedure is intended to assist with work planning and scheduling, resource planning, field implementation, and subcontractor procurement. Utility locating and excavation clearance requires site-specific information prior to the development of detailed operating procedures. This guidance is not intended to provide a detailed description of methodology and instrument operation. Specialized expertise during both planning and execution of several of the geophysical methods may also be required.

## 3.0 GLOSSARY

Electromagnetic Induction (EMI) Survey - A geophysical exploration method whereby electromagnetic fields are induced in the ground and the resultant secondary electromagnetic fields are detected as a measure of ground conductivity.

Magnetometer – A device used for precise and sensitive measurements of magnetic fields.

Magnetic Survey – A geophysical survey method that depends on detection of magnetic anomalies caused by the presence of buried ferromagnetic objects.

Metal Detection – A geophysical survey method that is based on electromagnetic coupling caused by underground conductive objects.

Vertical Gradiometer – A magnetometer equipped with two sensors that are vertically separated by a fixed distance. It is best suited to map near surface features and is less susceptible to deep geologic features.

Ground Penetrating Radar – Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture.

## 4.0 RESPONSIBILITIES

Project Manager (PM)/Task Order Manager (TOM) - Responsible for ensuring that all field activities are conducted in accordance with this procedure and the TtNUS Utility Locating and Clearance Policy.



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Site Manager (SM)/Field Operations Leader (FOL) - Responsible for the onsite verification that all field activities are performed in compliance with approved SOPs or as otherwise directed by the approved project plan(s).

Site Health & Safety Officer (SHSO) – Responsible to provide technical assistance and verify full compliance with this SOP and the TtNUS Utility Locating and Clearance Policy. The SHSO is also responsible for reporting any deficiencies to the Corporate Health and Safety Manager (HSM) and to the PM/TOM.

Health & Safety Manager (HSM) – Responsible for preparing, implementing, and modifying corporate health and safety policy.

Site Personnel – Responsible for understanding and implementing this SOP and the TtNUS Utility Locating and Clearance Policy.

## **5.0 PROCEDURES**

This procedure addresses the requirements and technical procedures that must be performed to minimize the potential for contact with underground and overhead utility services. These procedures are addressed individually from a buried and overhead standpoint.

### **5.1 Buried Utilities**

Buried utilities present a heightened concern because their location is not typically obvious by visual observation, and it is common that their presence and/or location is unknown or incorrectly known on client properties. The following procedure must be followed prior to beginning any excavation that might potentially be in the vicinity of underground utility services. In addition, the Utility Clearance Form (Attachment 3) must be completed for every location or cluster of locations where intrusive activities will occur.

Where the positive identification and de-energizing of underground utilities cannot be obtained and confirmed using the following steps, the PM/TOM is responsible for arranging for the procurement of a qualified, experienced, utility locating subcontractor who will accomplish the utility location and demarcation duties specified herein.

1. A comprehensive review must be made of any available property maps, blue lines, or as-builts prior to site activities. Interviews with local personnel familiar with the area should be performed to provide additional information concerning the location of potential underground utilities. Information regarding utility locations shall be added to project maps upon completion of this exercise.
- 2., A visual site inspection must be performed to compare the site plan information to actual field conditions. Any findings must be documented and the site plan/maps revised. The area(s) of proposed excavation or other subsurface activities must be marked at the site in white paint or pin flags to identify those locations of the proposed intrusive activities. The site inspection should focus on locating surface indications of potential underground utilities. Items of interest include the presence of nearby area lights, telephone service, drainage grates, fire hydrants, electrical service vaults/panels, asphalt/concrete scars and patches, and topographical depressions. Note the location of any emergency shut off switches. Any additional information regarding utility locations shall be added to project maps upon completion of this exercise and returned to the PM/TOM.

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3. If the planned work is to be conducted on private property (e.g., military installations, manufacturing facilities, etc.) the FOL must identify and contact appropriate facility personnel (e.g., public works or facility engineering) before any intrusive work begins to inquire about (and comply with) property owner requirements. It is important to note that private property owners may require several days to several weeks advance notice prior to locating utilities.
4. If the work location is on public property, the state agency that performs utility clearances must be notified (see Attachment 1). State "one-call" services must be notified prior to commencing fieldwork per their requirements. Most one-call services require, by law, 48- to 72-hour advance notice prior to beginning any excavation. Such services typically assign a "ticket" number to the particular site. This ticket number must be recorded for future reference and is valid for a specific period of time, but may be extended by contacting the service again. The utility service will notify utility representatives who then mark their respective lines within the specified time frame. It should be noted that most military installations own their own utilities but may lease service and maintenance from area providers. Given this situation, "one call" systems may still be required to provide location services on military installations.
5. Utilities must be identified and their locations plainly marked using pin flags, spray paint, or other accepted means. The location of all utilities must be noted on a field sketch for future inclusion on project maps. Utility locations are to be identified using the following industry-standard color code scheme, unless the property owner or utility locator service uses a different color code:

white	excavation/subsurface investigation location
red	electrical
yellow	gas, oil, steam
orange	telephone, communications
blue	water, irrigation, slurry
green	sewer, drain
6. Where utility locations are not confirmed with a high degree of confidence through drawings, schematics, location services, etc., the work area must be thoroughly investigated prior to beginning the excavation. In these situations, utilities must be identified using such methods as passive and intrusive surveys, physical probing, or hand augering. Each method has advantages and disadvantages including complexity, applicability, and price. It also should be noted that in many states, initial excavation is required by hand to a specified depth.
7. At each location where trenching or excavating will occur using a backhoe or other heavy equipment, and where utility identifications and locations cannot be confirmed prior to groundbreaking, the soil must be probed with a hand auger or pole (tile probe) made of non-conductive material. If these efforts are not successful in clearing the excavation area of suspect utilities, hand shoveling must be performed for the perimeter of the intended excavation.
8. All utilities uncovered or undermined during excavation must be structurally supported to prevent potential damage. Unless necessary as an emergency corrective measure, TtNUS shall not make any repairs or modifications to existing utility lines without prior permission of the utility owner, property owner, and Corporate HSM. All repairs require that the line be locked-out/tagged-out prior to work.

## 5.2 Overhead Power Lines

If it is necessary to work within the minimum clearance distance of an overhead power line, the overhead line must be de-energized and grounded, or re-routed by the utility company or a registered electrician. If protective measures such as guarding, isolating, or insulating are provided, these precautions must be

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adequate to prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

The following table provides the required minimum clearances for working in proximity to overhead power lines.

<u>Nominal Voltage</u>	<u>Minimum Clearance</u>
0 -50 kV	10 feet, or one mast length; whichever is greater
50+ kV	10 feet plus 4 inches for every 10 kV over 50 kV or 1.5 mast lengths; whichever is greater

## **6.0 UNDERGROUND LOCATING TECHNIQUES**

### **6.1 Geophysical Methods**

Geophysical methods include electromagnetic induction, magnetics, and ground penetrating radar. Additional details concerning the design and implementation of electromagnetic induction, magnetics, and ground penetrating radar surveys can be found in one or more of the TtNUS SOPs included in the References (Section 8.0).

#### **Electromagnetic Induction**

Electromagnetic Induction (EMI) line locators operate either by locating a background signal or by locating a signal introduced into the utility line using a transmitter. A utility line acts like a radio antenna, producing electrons, which can be picked up with a radiofrequency receiver. Electrical current carrying conductors have a 60HZ signal associated with them. This signal occurs in all power lines regardless of voltage. Utilities in close proximity to power lines or used as grounds may also have a 60HZ signal, which can be picked up with an EM receiver. A typical example of this type of geophysical equipment is an EM-61.

EMI locators specifically designed for utility locating use a special signal that is either indirectly induced onto a utility line by placing the transmitter above the line or directly induced using an induction clamp. The clamp induces a signal on the specific utility and is the preferred method of tracing since there is little chance of the resulting signals being interfered with. A good example of this type of equipment is the Schonstedt® MAC-51B locator. The MAC-51B performs inductively traced surveys, simple magnetic locating, and traced nonmetallic surveys.

When access can be gained inside a conduit to be traced, a flexible insulated trace wire can be used. This is very useful for non-metallic conduits but is limited by the availability of gaining access inside the pipe.

#### **Magnetics**

Magnetic locators operate by detecting the relative amounts of buried ferrous metal. They are incapable of locating or identifying nonferrous utility lines but can be very useful for locating underground storage tanks (UST's), steel utility lines, and buried electrical lines. A typical example of this type of equipment is the Schonstedt® GA-52Cx locator. The GA-52Cx is capable of locating 4-inch steel pipe up to 8 feet deep.

Non-ferrous lines are often located by using a typical plumbing tool (snake) fed through the line. A signal is then introduced to the snake that is then traced.

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## **Ground Penetrating Radar**

Ground Penetrating Radar (GPR) involves specialized radar equipment whereby a signal is sent into the ground via a transmitter. Some portion of the signal will be reflected from the subsurface material, which is then recorded with a receiver and electronically converted into a graphic picture. In general, an object which is harder than the surrounding soil will reflect a stronger signal. Utilities, tunnels, UST's, and footings will reflect a stronger signal than the surrounding soil. Although this surface detection method may determine the location of a utility, this method does not specifically identify utilities (i.e., water vs. gas, electrical vs. telephone); hence, verification may be necessary using other methods. This method is somewhat limited when used in areas with clay soil types or with a high water table.

## **6.2 Passive Detection Surveys**

### **Acoustic Surveys**

Acoustic location methods are generally most applicable to waterlines or gas lines. A highly sensitive Acoustic Receiver listens for background sounds of water flowing (at joints, leaks, etc.) or to sounds introduced into the water main using a transducer. Acoustics may also be applicable to determine the location of plastic gas lines.

### **Thermal Imaging**

Thermal (i.e., infrared) imaging is a passive method for detecting the heat emitted by an object. Electronics in the infrared camera convert subtle heat differentials into a visual image on the viewfinder or a monitor. The operator does not look for an exact temperature; rather they look for heat anomalies (either elevated or suppressed temperatures) characteristic of a potential utility line.

The thermal fingerprint of underground utilities results from differences in temperature between the atmosphere and the fluid present in a pipe or the heat generated by electrical resistance. In addition, infrared scanners may be capable of detecting differences in the compaction, temperature and moisture content of underground utility trenches. High-performance thermal imagery can detect temperature differences to hundredths of a degree.

## **6.3 Intrusive Detection Surveys**

### **Vacuum Excavation**

Vacuum excavation is used to physically expose utility services. The process involves removing the surface material over approximately a 1' x 1' area at the site location. The air-vacuum process proceeds with the simultaneous action of compressed air-jets to loosen soil and vacuum extraction of the resulting debris. This process ensures the integrity of the utility line during the excavation process, as no hammers, blades, or heavy mechanical equipment comes into contact with the utility line, eliminating the risk of damage to utilities. The process continues until the utility is uncovered. Vacuum excavation can be used at the proposed site location to excavate below the "utility window" which is usually 8 feet.

### **Hand-auger Surveys**

When the identification and location of underground utilities cannot be positively confirmed through document reviews and/or other methods, borings must be hand-augered for all locations where there is a potential to impact buried utilities. The minimum hand-auger depth that must be reached is to be determined considering the geographical location of the work site. This approach recognizes that the

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placement of buried utilities is influenced by frost line depths that vary by geographical region. Attachment 2 presents frost line depths for the regions of the contiguous United States. At a minimum, hand-auger depths must be at least to the frost line depth plus two (2) feet, but never less than 4 feet below ground surface (bgs). For augering, the hole must be reamed by hand to at least the diameter of the drill rig auger or bit prior to drilling. For soil gas surveys, the survey probe shall be placed as close as possible to the cleared hand-auger. It is important to note that a post-hole digger must not be used in place of a hand-auger.

### **Tile Probe Surveys**

For some soil types, site conditions, and excavation requirements, tile probes may be used instead of or in addition to hand-augers. Tile probes must be performed to the same depth requirements as hand-augers. Depending upon the site conditions and intended probe usage, tile probes should be made of non-conductive material such as fiberglass.

## **7.0 INTRUSIVE ACTIVITIES SUMMARY**

The following list summarizes the activities that must be performed prior to beginning subsurface activities:

1. Map and mark all subsurface locations and excavation boundaries using white paint or markers specified by the client or property owner.
2. Notify the property owner and/or client that the locations are marked. At this point, drawings of locations or excavation boundaries shall be provided to the property owner and/or client so they may initiate (if applicable) utility clearance.

Note: Drawings with confirmed locations should be provided to the property owner and/or client as soon as possible to reduce potential time delays.

3. Notify "One Call" service. If possible, arrange for an appointment to show the One Call representative the subsurface locations or excavation boundaries in person. This will provide a better location designation to the utilities they represent. You should have additional drawings should you need to provide plot plans to the One Call service.
4. Complete Attachment 3, Utility Clearance Form. This form should be completed for each excavation location. In situations where multiple subsurface locations exist within the close proximity of one another, one form may be used for multiple locations provided those locations are noted on the Utility Clearance Form. Upon completion, the Utility Clearance Form and revised/annotated utility location map becomes part of the project file.

## **8.0 REFERENCES**

TtNUS Utility Locating and Clearance Policy  
TtNUS SOP GH-3.1; Resistivity and Electromagnetic Induction  
TtNUS SOP GH-3.2; Magnetic and Metal Detection Surveys  
TtNUS SOP GH-3.4; Ground-penetrating Radar Surveys

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**ATTACHMENT 1**  
**LISTING OF UNDERGROUND UTILITY CLEARANCE RESOURCES**

<b>ALABAMA</b> Alabama Line Location (800) 292-8525 Tucson Blue Stake Center (800) 782-5348	<b>Maine</b> Dig Safe – Maine (800) 225-4977
<b>Alaska</b> Locate Call Center of Alaska Inc. (800) 478-3121	<b>Maryland</b> Miss Utility (800) 257-777 Miss Utility of Delmarva (800) 282-8555
<b>Arizona</b> Arizona Blue Stake Inc. (800) 782-5348	<b>Massachusetts</b> Dig Safe – Massachusetts (800) 322-4844
<b>Arkansas</b> Arkansas One Call System Inc. (800) 482-8998	<b>Michigan</b> Miss Dig System (800) 482-7171
<b>California</b> Underground Service Alert North (800) 227-2600 Underground Service Alert South (800) 227-2600	<b>Minnesota</b> Gopher State One Call (800) 252-1166
<b>Colorado</b> Utility Notification Center of Colorado (800) 922-1987	<b>Mississippi</b> Mississippi One-Call System Inc. (800) 227-6477
<b>Connecticut</b> Call Before You Dig (800) 922-4455	<b>Missouri</b> Missouri One Call System Inc. (800) 344-7483
<b>Delaware</b> Miss Utility of Delmarva (800) 282-8555	<b>Montana</b> Utilities Underground Location Center (800) 424-5555 Montana One Call Center (800) 551-8344
<b>District of Columbia</b> Miss Utility (800) 257-7777	<b>Nebraska</b> Diggers Hotline of Nebraska (800) 331-5666
<b>Florida</b> Call Sunshine (800) 432-4770	<b>Nevada</b> Underground Service Alert North (800) 227-2600
<b>Georgia</b> Utilities Protection Center Inc. (800) 282-7411	<b>New Hampshire</b> Dig Safe – New Hampshire (800) 225-4977
<b>Idaho</b> Palouse Empire Underground Coordinating Council (800) 882-1974  Utilities Underground Location Center (800) 424-5555  Kootenai Country Utility Coordinating Council (800) 428-4950  Shoshone County One Call (800) 398-3285  Dig Line (800) 342-1585  One Call Concepts (800) 626-4950	<b>New Jersey</b> New Jersey One Call (800) 272-1000
<b>Illinois</b> Julie Inc. (800) 892-0123  Digger (Chicago Utility Alert Network) (312) 744-7000	<b>New Mexico</b> New Mexico One Call System Inc. (800) 321-ALERT  Las Cruces-Dona Utility Council (505) 526-0400
<b>Indiana</b> Indiana Underground Plant Protection Services (800) 382-5544	<b>New York</b> Underground Facilities Protection Organization (800) 962-7962  New York City: Long Island One Call Center (800) 272-4480
<b>Iowa</b> Underground Plant Location Service Inc. (800) 292-8989	<b>North Carolina</b> The North Carolina One-Call Center Inc. (800) 632-4949
<b>Kansas</b> Kansas One-Call Center (800) 344-7233	<b>North Dakota</b> Utilities Underground Location Center (800) 795-0555
<b>Kentucky</b> Kentucky Underground Protection Inc. (800) 752-6007	<b>Ohio</b> Ohio Utilities Protection Service (800) 362-2764  Oil & Gas Producers Underground Protection Service (800) 925-0988
<b>Louisiana</b> Louisiana One Call (800) 272-3020	<b>Oklahoma</b> Call Okie (800) 522-6543

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#### **Oregon**

Utilities Underground Location Center  
(800) 424-5555

Douglas Utilities Coordinating Council  
(503) 673-6676

Josephine Utilities Coordinating Council  
(503) 476-6676

Rogue Basin Utility Coordinating Council  
(503) 779-6676

Utilities Notification Center  
(800) 332-2344

#### **Pennsylvania**

Pennsylvania One Call System Inc.  
(800) 242-1776

#### **Rhode Island**

Dig Safe – Rhode Island (800) 225-4977

#### **South Carolina**

Palmetto Utility Protection Service Inc.  
(800) 922-0983

#### **South Dakota**

South Dakota One Call (800) 781-7474

#### **Tennessee**

Tennessee One-Call System (800) 351-1111

#### **Texas**

Texas One Call System (800) 245-4545

Texas Excavation Safety System (800) 344-8377

Lone Star Notification Center (800) 669-8344

#### **Utah**

Blue Stakes Location Center (800) 662-4111

#### **Vermont**

Dig Safe – Vermont (800) 225-4977

#### **Virginia**

Miss Utility of Virginia (800) 552-7001

Miss Utility (800) 257-7777

Miss Utility of Delmarva (800) 441-8355

#### **Washington**

Utilities Underground Location Center  
(800) 424-5555

Grays Harbor & Pacific County  
Utility Coordinating Council  
(206) 535-3550

Utilities County of Cowlitz County  
(360) 425-2506

Chelan-Douglas Utilities Coordinating Council  
(509) 663-6111

Upper Yakima County  
Underground Utilities Council  
(800) 553-4344

Inland Empire Utility Coordinating Council  
(509) 456-8000

Palouse Empire Utilities Coordinating Council  
(800) 822-1974

Utilities Notification Center (800) 332-2344

#### **West Virginia**

Miss Utility of West Virginia Inc. (800) 245-4848

#### **Wisconsin**

Diggers Hotline Inc. (800) 242-8511

#### **Wyoming**

West Park Utility Coordinating Council  
(307) 587-4800

Call-In Dig-In Safety Council (800) 300-9811

Fremont County Utility Coordinating Council  
(800) 489-8023

Central Wyoming Utilities Coordinating Council  
(800) 759-8035

Southwest Wyoming One Call (307) 362-8888

Carbon County Utility  
Utility Coordinating Council (307) 324-6666

Albany County Utility Coordinating Council  
(307) 742-3615

Southeast Wyoming Utilities Coordinating Council  
(307) 638-6666

Wyoming One-Call  
(800) 348-1030

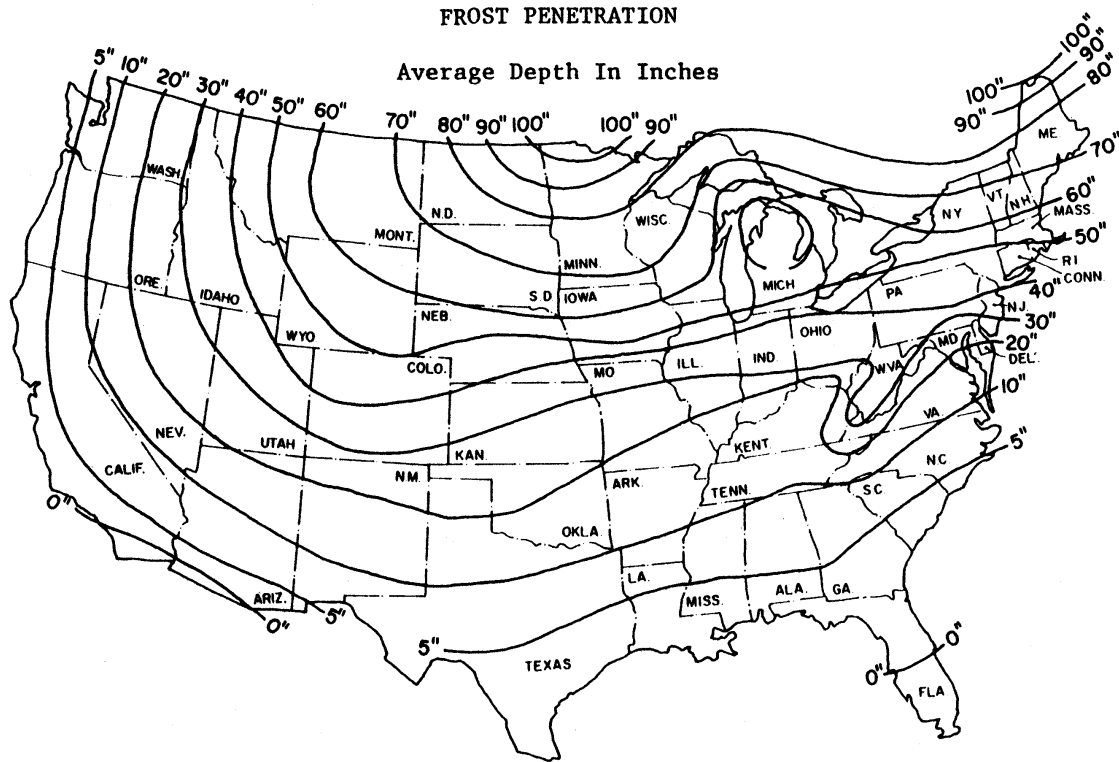
Utilities Underground Location Center  
(800) 454-5555

Converse County Utility Coordination Council  
(800) 562-5561

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## ATTACHMENT 2

### FROST LINE PENETRATION DEPTHS BY GEOGRAPHIC LOCATION



Courtesy U.S. Department Of Commerce



Subject  UTILITY LOCATING AND EXCAVATION CLEARANCE	Number HS-1.0	Page 11 of 11
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**ATTACHMENT 3  
UTILITY CLEARANCE FORM**

Client: \_\_\_\_\_ Project Name: \_\_\_\_\_  
 Project No.: \_\_\_\_\_ Completed By: \_\_\_\_\_  
 Location Name: \_\_\_\_\_ Work Date: \_\_\_\_\_  
 Excavation Method/Overhead Equipment: \_\_\_\_\_

1.     Underground Utilities Circle One
- a)     Review of existing maps? yes no N/A
- b)     Interview local personnel? yes no N/A
- c)     Site visit and inspection? yes no N/A
- d)     Excavation areas marked in the field? yes no N/A
- e)     Utilities located in the field? yes no N/A
- f)     Located utilities marked/added to site maps? yes no N/A
- g)     Client contact notified yes no N/A  
        Name \_\_\_\_\_ Telephone: \_\_\_\_\_ Date: \_\_\_\_\_
- g)     State One-Call agency called? yes no N/A  
        Caller: \_\_\_\_\_  
        Ticket Number: \_\_\_\_\_ Date: \_\_\_\_\_
- h)     Geophysical survey performed? yes no N/A  
        Survey performed by: \_\_\_\_\_  
        Method: \_\_\_\_\_ Date: \_\_\_\_\_
- i)     Hand augering performed? yes no N/A  
        Augering completed by: \_\_\_\_\_  
        Total depth: \_\_\_\_\_ feet Date: \_\_\_\_\_
- j)     Trench/excavation probed? yes no N/A  
        Probing completed by: \_\_\_\_\_  
        Depth/frequency: \_\_\_\_\_ Date: \_\_\_\_\_
2.     Overhead Utilities Present Absent
- a)     Determination of nominal voltage yes no N/A
- b)     Marked on site maps yes no N/A
- c)     Necessary to lockout/insulate/re-route yes no N/A
- d)     Document procedures used to lockout/insulate/re-route yes no N/A
- e)     Minimum acceptable clearance (SOP Section 5.2): \_\_\_\_\_

3.     Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approval:

\_\_\_\_\_  
 Site Manager/Field Operations Leader

\_\_\_\_\_  
 Date

c: PM/Project File  
 Program File

**ATTACHMENT III**

**EQUIPMENT INSPECTION CHECKLIST**

## EQUIPMENT INSPECTION

**COMPANY:** \_\_\_\_\_ **UNIT NO.** \_\_\_\_\_

**FREQUENCY:** Inspect daily, document prior to use and as repairs are needed.

Inspection Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_\_ Equipment Type: \_\_\_\_\_

	(e.g., bulldozer)		
	Good	Need Repair	N/A
Tires or tracks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hoses and belts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cab, mirrors, safety glass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Turn signals, lights, brake lights, etc. (front/rear) for equipment approved for highway use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Is the equipment equipped with audible back-up alarms and back-up lights?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Horn and gauges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brake condition (dynamic, park, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire extinguisher (Type/Rating - _____)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fluid Levels:			
- Engine oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Transmission fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Brake fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Cooling system fluid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Windshield wipers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Hydraulic oil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oil leak/lube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coupling devices and connectors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exhaust system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blade/boom/ripper condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Accessways: Frame, hand holds, ladders, walkways (non-slip surfaces), guardrails?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power cable and/or hoist cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steering (standard and emergency)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Safety Guards:

	Yes	No
- Around rotating apparatus (belts, pulleys, sprockets, spindles, drums, flywheels, chains) all points of operations protected from accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Hot pipes and surfaces exposed to accidental contact? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Emergency shut off switches have been identified and communicated to the field crew? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Have emergency shutoffs been field tested? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Results? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Are any structural members bent, rusted, or otherwise show signs of damage? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Are fueling cans used with this equipment approved type safety cans? _____	<input type="checkbox"/>	<input type="checkbox"/>
- Have the attachments designed for use (as per manufacturer's recommendation) with this equipment been inspected and are considered suitable for use? _____	<input type="checkbox"/>	<input type="checkbox"/>

### Portable Power Tools:

- Tools and Equipment in Safe Condition? _____	<input type="checkbox"/>	<input type="checkbox"/>
------------------------------------------------	--------------------------	--------------------------

- Saw blades, grinding wheels free from recognizable defects (grinding wheels have been sounded)? \_\_\_\_\_ ☐ ☐
- Portable electric tools properly grounded? \_\_\_\_\_ ☐ ☐
- Damage to electrical power cords? \_\_\_\_\_ ☐ ☐
- Blade guards in place? \_\_\_\_\_ ☐ ☐
- Components adjusted as per manufacturers recommendation? \_\_\_\_\_ ☐ ☐

**Cleanliness:**

- Overall condition (is the decontamination performed prior to arrival on-site considered acceptable)? \_\_\_\_\_
- Where was this equipment used prior to its arrival on site? \_\_\_\_\_
- Site Contaminants of concern at the previous site? \_\_\_\_\_
- Inside debris (coffee cups, soda cans, tools and equipment) blocking free access to foot controls? \_\_\_\_\_

**Operator Qualifications (as applicable for heavy equipment):**

- Does the operator have proper licensing where applicable, (e.g., CDL)? \_\_\_\_\_
- Does the operator, understand the equipments operating instructions? \_\_\_\_\_
- Is the operator experienced with this equipment? \_\_\_\_\_
- Does the operator have emotional and/or physical limitations which would prevent him/her from performing this task in a safe manner? \_\_\_\_\_
- Is the operator 21 years of age or more? \_\_\_\_\_

**Identification:**

- Is a tagging system available, for positive identification, for tools removed from service? \_\_\_\_\_

**Additional Inspection Required Prior to Use On-Site**

- |                                                                            | <b>Yes</b>               | <b>No</b>                |
|----------------------------------------------------------------------------|--------------------------|--------------------------|
| - Does equipment emit noise levels above 90 decibels?                      | <input type="checkbox"/> | <input type="checkbox"/> |
| - If so, has an 8-hour noise dosimetry test been performed?                | <input type="checkbox"/> | <input type="checkbox"/> |
| - Results of noise dosimetry: _____                                        |                          |                          |
| - Defects and repairs needed: _____                                        |                          |                          |
| - General Safety Condition: _____                                          |                          |                          |
| - Operator or mechanic signature: _____                                    |                          |                          |
| Approved for Use: <input type="checkbox"/> Yes <input type="checkbox"/> No |                          |                          |

\_\_\_\_\_  
Site Safety Officer Signature

**ATTACHMENT IV**

**SAFE WORK PERMITS**

**SAFE WORK PERMIT  
DECONTAMINATION ACTIVITIES  
NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Decontamination of sampling equipment and machinery (i.e., drill rigs, augers). Brushes and spray bottles will be used to decon small sampling equipment. Pressure washers or steam cleaning units will be used to decon the augers and drilling.
- II. Required Monitoring Instrument(s): PID with 10.6 eV (or higher) lamp source (used to screen equipment)
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector TINUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- |                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>V. Protective equipment required</p> <p>Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/><br/>         Level C <input type="checkbox"/> Level A <input type="checkbox"/><br/>         Detailed on Reverse</p> | <p>Respiratory equipment required</p> <p>Full face APR <input type="checkbox"/> Escape Pack <input type="checkbox"/><br/>         Half face APR <input type="checkbox"/> SCBA <input type="checkbox"/><br/>         SKA-PAC SAR <input type="checkbox"/> Bottle Trailer <input type="checkbox"/><br/>         Skid Rig <input type="checkbox"/> None <input checked="" type="checkbox"/></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety glasses, safety footwear, and nitrile gloves. When using pressure washers, steam cleaners field crews will wear hearing protection, and face shields.

- |                                                                 |                                                                                                          |                                                                                                   |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <p>VI. Chemicals of Concern<br/><u>VOCs and Diesel Fuel</u></p> | <p>Action Level(s)<br/><u>Any sustained readings<br/>above 10 ppm<br/>in worker breathing zones.</u></p> | <p>Response Measures<br/><u>Suspend site activities and<br/>report to an unaffected area.</u></p> |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|

- |                                             |                                                                     |                                                                                                      |                                                                     |
|---------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| VII. Additional Safety Equipment/Procedures |                                                                     |                                                                                                      |                                                                     |
| Hard-hat .....                              | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |                                                                     |
| Safety Glasses .....                        | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness                                                                                  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Chemical/splash goggles .....               | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio                                                                                                | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash Shield .....                         | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Barricades                                                                                           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Splash suits/coveralls .....                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - Nitrile)                                                                              | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots               | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen                                                                                    | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

Modifications/Exceptions: PVC rain suits or PE or PVC coated Tyvek for protection against splashes and overspray. Chemical resistant boot covers if excessive liquids are generated or to protected footwear.

- |                                                |                                     |                                     |                         |
|------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------|
| VIII. Procedure review with permit acceptors   | Yes                                 | NA                                  |                         |
| Safety shower/eyewash (Location & Use) .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Emergency alarms .....  |
| Procedure for safe job completion .....        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Evacuation routes ..... |
| Contractor tools/equipment/PPE inspected ..... | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Assembly points .....   |

- |                                                               |                                     |                          |                                     |
|---------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| IX. Site Preparation                                          | Yes                                 | No                       | NA                                  |
| Utility Locating and Excavation Clearance completed .....     | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established ..... | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical Hazards Barricaded and Isolated .....                | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Emergency Equipment Staged .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) ☐ Yes ☒ No

*If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

- XI. Special instructions, precautions: Chemical hazards with decontamination because of use of fluids such as isopropyl alcohol, methanol, etc. To minimize the potential for exposure, site personnel will use PPE and prevent contact with potentially contaminated equipment. Refer to the manufacturer's MSDS regarding PPE, handling, storage, and first-aid measures related to decontamination fluids.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT FOR  
IDW HANDLING, SAMPLING, AND STAGING OF DRUMS  
NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Handling, sampling, and staging of IDW drums.
- II. Required Monitoring Instruments: PID with 10.6 eV (or higher) lamp to detect presence of VOCs
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☒ Yes ☐ No Initials of Inspector TtNUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- |                                                                                                                                                                                                                                 |                                                                                                                                                                                                                        |                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>V. Protective equipment required</p> <p>Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/></p> <p>Level C <input type="checkbox"/> Level A <input type="checkbox"/></p> <p>Detailed on Reverse</p> | <p>Respiratory equipment required</p> <p>Full face APR <input type="checkbox"/></p> <p>Half face APR <input type="checkbox"/></p> <p>SKA-PAC SAR <input type="checkbox"/></p> <p>Skid Rig <input type="checkbox"/></p> | <p>Escape Pack <input type="checkbox"/></p> <p>Airline/SCBA <input checked="" type="checkbox"/></p> <p>Bottle trailer <input type="checkbox"/></p> <p>None <input type="checkbox"/></p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety shoes, hardhat, nitrile outer gloves with surgical-style inner gloves, impermeable boot covers.

- |                                                                                                    |                                                                                                                                 |                                                                                                                |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <p>VI. Chemicals of Concern</p> <p><u>VOCs, SVOC associated</u></p> <p><u>with Diesel Fuel</u></p> | <p>Action Level(s)</p> <p><u>Any sustained readings</u></p> <p><u>above 10 ppm</u></p> <p><u>in worker breathing zones.</u></p> | <p>Response Measures</p> <p><u>Suspend site activities and</u></p> <p><u>report to an unaffected area.</u></p> |
|----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|

- VII. Additional Safety Equipment/Procedures
- |                               |                                                                     |                                                                                                          |
|-------------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Hard-hat .....                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No     |
| Safety Glasses .....          | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                  |
| Chemical/splash goggles ..... | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                |
| Splash Shield .....           | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                           |
| Splash suits/coveralls .....  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Gloves (Type - <u>Nitrile/Work</u> ) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                    |
- Modifications/Exceptions: Tyvek coverall if there is a potential for soiling clothes. Work/rest regimen to be determined by SSO.

- |                                                |                          |                                     |                         |
|------------------------------------------------|--------------------------|-------------------------------------|-------------------------|
| VIII. Procedure review with permit acceptors   | Yes                      | NA                                  |                         |
| Safety shower/eyewash (Location & Use) .....   | <input type="checkbox"/> | <input type="checkbox"/>            | Emergency alarms .....  |
| Procedure for safe job completion .....        | <input type="checkbox"/> | <input type="checkbox"/>            | Evacuation routes ..... |
| Contractor tools/equipment/PPE inspected ..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Assembly points .....   |

- |                                                               |                                     |                          |                                     |
|---------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| IX. Site Preparation                                          | Yes                                 | No                       | NA                                  |
| Utility Locating and Excavation Clearance completed .....     | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| Physical Hazards Barricaded and Isolated .....                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| Emergency Equipment Staged .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) .....
- ☐ Yes ☒ No
- If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

- XI. Special instructions, precautions: \_\_\_\_\_

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_





**SAFE WORK PERMIT**  
**MOBILIZATION AND DEMOBILIZATION ACTIVITIES**  
**NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Mobilization and demobilization activities  
activities.
- II. Required Monitoring Instruments: None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector TtNUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- IV. Protective equipment required Respiratory equipment required
- |                                                                              |                                        |                                          |
|------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|
| Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/>     |
| Level C <input type="checkbox"/> Level A <input type="checkbox"/>            | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/>            |
| Detailed on Reverse                                                          | SKA-PAC SAR <input type="checkbox"/>   | Bottle Trailer <input type="checkbox"/>  |
|                                                                              | Skid Rig <input type="checkbox"/>      | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, or coveralls, safety glasses and safety footwear. Hard hats and hearing protection will be worn when working near operating equipment

V. Chemicals of Concern	Action Level(s)	Response Measures
None anticipated given the nature of surveying activities and limited contact w/ media.	_____	_____

VI. Additional Safety Equipment/Procedures

Hard-hat .....	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No
Safety Glasses .....	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Chemical/splash goggles .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash Shield .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Splash suits/coveralls.....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Gloves (Type - Nitrile) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Steel toe Work shoes or boots	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks). If working in areas where snakes are a threat, wear snake chaps to protect against bites.

VII. Procedure review with permit acceptors	Yes	NA	Yes	NA
Safety shower/eyewash (Location & Use) .....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emergency alarms.....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Procedure for safe job completion.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Evacuation routes.....	<input checked="" type="checkbox"/> <input type="checkbox"/>
Contractor tools/equipment/PPE inspected.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Assembly points .....	<input checked="" type="checkbox"/> <input type="checkbox"/>

VIII. Site Preparation	Yes	No	NA
Utility Locating and Excavation Clearance completed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vehicle and Foot Traffic Routes Cleared and Established.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Hazards Barricaded and Isolated.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Emergency Equipment Staged.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- IX. Additional Permits required (Hot work, confined space entry, excavation etc.)..... ☐ Yes ☐ No  
*If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

X. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_



**SAFE WORK PERMIT  
MULTI-MEDIA SAMPLING  
NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Multi media sampling including soils (surface and sub surface); sediments; groundwater and IDW.
- II. Required Monitoring Instrument(s): PID with 10.6 eV (or higher) lamp source
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector TtNUS

**SECTION II: General Safety Requirements** (To be filled in by permit issuer)

- |                                                                              |                                        |                                          |
|------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|
| V. Protective equipment required                                             | Respiratory equipment required         |                                          |
| Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/>     |
| Level C <input type="checkbox"/> Level A <input type="checkbox"/>            | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/>            |
| Detailed on Reverse                                                          | SKA-PAC SAR <input type="checkbox"/>   | Bottle Trailer <input type="checkbox"/>  |
|                                                                              | Skid Rig <input type="checkbox"/>      | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, safety glasses and nitrile gloves. Hard hats and hearing protection will be worn when working near operating equipment and or when required by the facility.

- |                                                         |                                                                                                  |                                                                                           |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| VI. Chemicals of Concern<br><u>VOCs and Diesel Fuel</u> | Action Level(s)<br><u>Any sustained readings<br/>above 10 ppm<br/>in worker breathing zones.</u> | Response Measures<br><u>Suspend site activities and<br/>report to an unaffected area.</u> |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|

VII. Additional Safety Equipment/Procedures

- |                               |                                                                     |                                                                                             |
|-------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Hard-hat .....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input type="checkbox"/> No   |
| Safety Glasses .....          | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No     |
| Chemical/splash goggles ..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                   |
| Splash Shield .....           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No              |
| Splash suits/coveralls .....  | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Gloves (Type - Nitrile) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No       |

Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work cloths and PVC or PE coated Tyvek if saturation or work cloths may occur.

- |                                                |                                     |                                     |                         |                                     |
|------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------|-------------------------------------|
| VIII. Procedure review with permit acceptors   | Yes                                 | NA                                  | Yes                     | NA                                  |
| Safety shower/eyewash (Location & Use) .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | Emergency alarms .....  | <input checked="" type="checkbox"/> |
| Procedure for safe job completion .....        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Evacuation routes ..... | <input checked="" type="checkbox"/> |
| Contractor tools/equipment/PPE inspected ..... | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | Assembly points .....   | <input checked="" type="checkbox"/> |

- |                                                               |                                     |                          |                                     |
|---------------------------------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| IX. Site Preparation                                          | Yes                                 | No                       | NA                                  |
| Utility Locating and Excavation Clearance completed .....     | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| Physical Hazards Barricaded and Isolated .....                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |
| Emergency Equipment Staged .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) .....
- If yes, complete permit required or contact Health Sciences, Pittsburgh Office*
- ☐ Yes ☒ No

- XI. Special instructions, precautions: Minimize contact with free product. Ensure hose connects are secure and stay a safe distance away from vacuum truck and associated hoses.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT**  
**SOIL BORING AND SUBSURFACE SOIL SAMPLING OPERATIONS**  
**NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Subsurface soil sample collected via hollow stem auger, and direct push technology. Monitoring Well installation, purging and development.
- II. Required Monitoring Instruments: PID with 10.6 eV (or higher) lamp source
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector TINUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- V. Protective equipment required
- |                                             |                                  |                                        |                                          |
|---------------------------------------------|----------------------------------|----------------------------------------|------------------------------------------|
| Level D <input checked="" type="checkbox"/> | Level B <input type="checkbox"/> | Respiratory equipment required         |                                          |
| Level C <input type="checkbox"/>            | Level A <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/>     |
| Detailed on Reverse                         |                                  | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/>            |
|                                             |                                  | SKA-PAC SAR <input type="checkbox"/>   | Bottle Trailer <input type="checkbox"/>  |
|                                             |                                  | Skid Rig <input type="checkbox"/>      | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Minimum requirement include sleeved shirt and long pants, safety footwear, and nitrile gloves. Safety glasses, hard hats, and hearing protection will be worn when working near or sampling in the vicinity of the drill rig or other operating equipment.

- |                                                    |                                                                       |                                                                  |
|----------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------|
| VI. Chemicals of Concern                           | Action Level(s)                                                       | Response Measures                                                |
| <u>VOCs and SVOCs associated with Diesel Fuel.</u> | <u>Any sustained readings above 10 ppm in worker breathing zones.</u> | <u>Suspend site activities and report to an unaffected area.</u> |

- VII. Additional Safety Equipment/Procedures
- |                               |                                                                     |                                                                                                      |
|-------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Hard-hat .....                | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Hearing Protection (Plugs/Muffs) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| Safety Glasses .....          | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No              |
| Chemical/splash goggles ..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                            |
| Splash Shield .....           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                       |
| Splash suits/coveralls .....  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Gloves (Type - <u>Nitrile</u> ) <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No  |
| Steel toe Work shoes or boots | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                |
- Modifications/Exceptions: Tyvek coverall if there is a potential for soiling work cloths. PVC or PE coated Tyvek if saturation or work cloths may occur.

- |                                                |                                     |                          |                         |                                     |                          |
|------------------------------------------------|-------------------------------------|--------------------------|-------------------------|-------------------------------------|--------------------------|
| VIII. Procedure review with permit acceptors   | Yes                                 | NA                       |                         | Yes                                 | NA                       |
| Safety shower/eyewash (Location & Use) .....   | <input type="checkbox"/>            | <input type="checkbox"/> | Emergency alarms .....  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Procedure for safe job completion .....        | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Evacuation routes ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Contractor tools/equipment/PPE inspected ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Assembly points .....   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

- |                                                               |                                     |                          |                          |
|---------------------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| IX. Site Preparation                                          | Yes                                 | No                       | NA                       |
| Utility Locating and Excavation Clearance completed .....     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established ..... | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Physical Hazards Barricaded and Isolated .....                | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Emergency Equipment Staged .....                              | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) ☒ Yes ☐ No  
*If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

XI. Special instructions, precautions: The TiNUS SOP on Utility Location and Excavation Clearance will be followed for all subsurface activities. Minimize contact with free product. Ensure hose connects are secure and stay a safe distance away from vacuum truck and associated hoses.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_

**SAFE WORK PERMIT  
SURVEYING ACTIVITIES  
NAVAL STATION, MAYPORT, FLORIDA**

Permit No. \_\_\_\_\_ Date: \_\_\_\_\_ Time: From \_\_\_\_\_ to \_\_\_\_\_

**SECTION I: General Job Scope**

- I. Work limited to the following (description, area, equipment used): Geographical surveys
- II. Required Monitoring Instruments: None
- III. Field Crew: \_\_\_\_\_
- IV. On-site Inspection conducted ☐ Yes ☐ No Initials of Inspector TtNUS

**SECTION II: General Safety Requirements (To be filled in by permit issuer)**

- V. Protective equipment required      Respiratory equipment required
- |                                                                              |                                        |                                          |
|------------------------------------------------------------------------------|----------------------------------------|------------------------------------------|
| Level D <input checked="" type="checkbox"/> Level B <input type="checkbox"/> | Full face APR <input type="checkbox"/> | Escape Pack <input type="checkbox"/>     |
| Level C <input type="checkbox"/> Level A <input type="checkbox"/>            | Half face APR <input type="checkbox"/> | SCBA <input type="checkbox"/>            |
| Detailed on Reverse                                                          | SKA-PAC SAR <input type="checkbox"/>   | Bottle Trailer <input type="checkbox"/>  |
|                                                                              | Skid Rig <input type="checkbox"/>      | None <input checked="" type="checkbox"/> |

Modifications/Exceptions: Minimum requirements include sleeved shirt and long pants and safety footwear.

Safety glasses, hard hats, and hearing protection will be worn when working near operating equipment.

- | VI. Chemicals of Concern              | Action Level(s) | Response Measures |
|---------------------------------------|-----------------|-------------------|
| <u>None anticipated given the</u>     | <u>None</u>     |                   |
| <u>nature of surveying activities</u> |                 |                   |
| <u>and limited contact w/ media.</u>  |                 |                   |

VII. Additional Safety Equipment/Procedures

- |                               |                                                                     |                                                                                                      |
|-------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| Hard-hat .....                | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Hearing Protection (Plugs/Muffs) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| Safety Glasses .....          | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Safety belt/harness <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No              |
| Chemical/splash goggles ..... | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Radio <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                            |
| Splash Shield .....           | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Barricades <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                       |
| Splash suits/coveralls .....  | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Gloves (Type - Work) <input type="checkbox"/> Yes <input type="checkbox"/> No                        |
| Steel toe Work shoes or boots | <input type="checkbox"/> Yes <input type="checkbox"/> No            | Work/rest regimen <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                |

Modifications/Exceptions: Tyvek coverall to protect against natural hazards (e.g., ticks). If working in areas where snakes are a threat, wear snake chaps to protect against bites. In high traffic areas wear high visibility vests.

- | VIII. Procedure review with permit acceptors   | Yes                      | NA                                  | Yes                     | NA                                  |
|------------------------------------------------|--------------------------|-------------------------------------|-------------------------|-------------------------------------|
| Safety shower/eyewash (Location & Use) .....   | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Emergency alarms .....  | <input checked="" type="checkbox"/> |
| Procedure for safe job completion .....        | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Evacuation routes ..... | <input checked="" type="checkbox"/> |
| Contractor tools/equipment/PPE inspected ..... | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Assembly points .....   | <input checked="" type="checkbox"/> |

- | IX. Site Preparation                                          | Yes                      | No                       | NA                                  |
|---------------------------------------------------------------|--------------------------|--------------------------|-------------------------------------|
| Utility Locating and Excavation Clearance completed .....     | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Vehicle and Foot Traffic Routes Cleared and Established ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Physical Hazards Barricaded and Isolated .....                | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Emergency Equipment Staged .....                              | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- X. Additional Permits required (Hot work, confined space entry, excavation etc.) ..... ☐ Yes ☒ No  
*If yes, complete permit required or contact Health Sciences, Pittsburgh Office*

XI. Special instructions, precautions: Preview work locations to identify potential hazards (slips, trips, and falls, natural hazards, etc.) Avoid potential nesting areas. Wear light colored clothing so that ticks and other biting insects can be easily visible and can be removed. Inspect clothing and body for ticks. Minimize contact with potentially contaminated media. Suspend site activities in the event of inclement weather.

Permit Issued by: \_\_\_\_\_ Permit Accepted by: \_\_\_\_\_